

57. Yang, Perry P. J., 2001, Digital Geographic Design: Looking for a New Horizon for Architecture, Landscape and Urban Design Professionals, in *Architectural Education for the Asian Century: Proceedings of the 1st ACAE Conference on Architectural Education*, ed. Milton Tan, National University of Singapore, Singapore, September 7, 2001.
58. Yang, Perry P. J., 2001, Ecological Effects of Metropolitan Form: A Landscape Ecological Analysis of 20 Years of Urban Sprawl in the Eastern-Taipei Metropolitan Fringes, in *the 1st World Planning Schools Congress: Planning for Cities in the 21st Century, Opportunities and Challenges*, Tongji University, Shanghai, July 11, 2001.
59. Yang, Perry P. J., 2001, "A Quantitative Analysis of Metropolitan Form: Applying GI Technology to the Analysis of Landscape Change of Keelung River Valley", in *the 5th National Planning Forum*, National Cheng-Kung University, Tainan, Taiwan, March 17, 2001. (in Chinese)
60. Yang, Perry P. J., Wang, Hung-Kai, 2000, The Making of Sustainable Urban Form by Landscape Ecological Planning, in *the 15th Annual Symposium of International Association of Landscape Ecology*, FT Lauderdale, Florida, April 1, 2000.
61. Yang, Perry P. J., 1998, Design with Nature, or Design with Natural Process, in *the 8th International Planning History Conference: Twentieth Century Urban Planning Experience*, ed. Robert Freestone, University of New South Wales, Sydney, Australia)
62. Yang, Perry P. J., 1995, Eco-participatory Planning: A Case Study of the Bunun Tribal Building Plan in Taitung, Taiwan, in *the First International Symposium on Asia Pacific Architecture: The East-West Encounter*, University of Hawaii at Manoa, Honolulu, March 22, 1995.

B3. Other Refereed Material

N/A

C. Other Publications and Creative Products

(As Curator of Design Exhibitions)

1. *2015 Curator, Resilient Urban Systems: Studio, Research, Design and Image, the Stubbins Gallery, College of Architecture, Georgia Tech, August 26 – September 11, 2015.
2. *2015 Curator, with Wang Yi of Tongji University, Shanghai Chongming Eco Island Studio Exhibition, in *2015 International Symposium on Ecological Urban Design*, College of Architecture and Urban Planning, Tongji University, June 5-6, 2015.

D. Presentations

(Keynote addresses in international conferences)

1. *2024 Smart Cities for Systemic Changes: Enhancing Carbon Neutrality by Urban Systems Design, in *Africa smart city forum*, UM6P, Morocco.
1. *2023 Urban Systems Design for Smart Cities, in *Asian Smart Cities Network and Digital Twin 2023 Symposium: Hong Kong Future Urban Living*, City University of Hong Kong, June 10, 2023, Hong Kong.
2. *2023 Incorporating Data Analytics into Urban Systems Design for Carbon Neutrality, in *Urban Sustainability Through Innovative Technologies*, Hong Kong Polytechnic University, July 6-7, 2023, Hong Kong.
3. *2022 Zero Carbon Smart City Strategies: Taipei in Competition with Asian Primate Cities, in *2022 Taipei City Net-Zero City Forum*, October 10, 2022, Taipei, Taiwan.
4. *2021 Urban Systems Design for Low Carbon Energy District: Tokyo, Shenzhen and Atlanta, in *CUE2021: Applied Energy Symposium*, September 4-8, 2021, Matsue, Japan.
5. *2020 Urban Systems Design for Smart Cities, in *Korea LH Smart City Forum* (with two other keynote speakers including Byeon Changheum, CEO of Korean Land & Housing Corporation, Anthony Townsend, Cornell Tech), November 19, 2020, Seoul, Korea.
6. *2018 Sustainable Urbanization, in *Covestro - Tongji Sustainable Development Forum 2018*, Covestro (Bayer Material Science) and UN Environment - Tongji Institute, June 1, 2018, Tongji University, Shanghai.
7. *2018 Urban Systems Design: A Model of Smart Cities, in *International Workshop on Towards Green Smart Cities in the IoT Era*, Future Earth and Global Carbon Project, with Yoshiki Yamagata and Hiroaki Nishi on March 19-21, the University of Tokyo.
8. *2017 An outline of the eco smart city project using smart materials, in *Covestro - Tongji Sustainable Development Forum 2017*, Covestro (Bayer Material Science) and UN Environment - Tongji Institute, December 14, 2017, PRDC Covestro, Shanghai.
9. *2016 Urban carbon mapping of four global downtowns: Manhattan, Tokyo, Shanghai and Atlanta, *GCP-WUDAPT Workshop on Building Global Urban Carbon Mapping*, In collaboration with Future Earth Knowledge Networks, on 28-29 June, 2016 in Thun, Switzerland.
10. *2015 Material Science for Future Urban Systems - 10KM² Near Zero Energy District (nZED), in *Covestro - Tongji Sustainable Development Forum 2015: Smart Materials in Sustainable Future Cities*, Covestro (Bayer Material Science) and Tongji University, December 16, 2015

11. *2015 Energy Resilient Urban System and its Design Problem, in *Global Carbon Project (GCP) Workshop on Tools and Indicators for Assessing Urban Resilience*, the University of Tokyo, December 7-10, 2015.
12. *2015 The Agenda of Sino-U.S. Eco Urban Lab: Reconstructing ecological urbanism in the face of the next round urbanization process of China and its global impact, in *2015 International Symposium on Ecological Urban Design*, organized by Sino-U.S. Eco Urban Lab, Georgia Institute of Technology and Tongji University, 5-6 June 2015, Shanghai.
13. *2015 Searching for research agenda of Urban Energy Systems Design, in *2015 International Conference on City Sciences (ICCS): New architectures, infrastructures and services for future cities*, Technical University of Madrid and Tongji University, 4-5 June 2015, Shanghai
14. *2015 Design for urban metabolism: From 1950s–1970s Japanese metabolism to the post-oil city design theory, in *Global Carbon Project (GCP) Workshop and Toyota High-level Symposium on Sustainable Cities*, January 2015.
15. *2014 Featured speech “Redefining Public Realm through Reconstructing Ecology of Urbanization in China and Asian Mega Cities” at ***the Big Ideas Session – Design of the Public Realm in Asian Mega-Cities (with Gary Hack), the 54th Annual Conference of ACSP***, Philadelphia, October 30 – November 2, 2014.
16. *2014 Design for ecological urban systems: Two models or ways of thinking in *Eco Smart City Symposium*, Tongji University, Shanghai, October 24-25, 2014
17. *2014 Design and Planning Workshop as an Urban Laboratory in *iCities 2014: Workshop on Workshop*, National Cheng-Kung University, Tainan, October 14-15, 2014.
18. *2014 EAR (Eco Area Ratio): A tool of energy performance and carbon reduction assessment for ecological urban systems in *Shanghai Chongming Eco-Island International Forum*, Shanghai, September 24-26, 2014
19. *2011 Plenary speech “Design challenges of low energy urban systems design”, *2011 World Congress on Engineering and Technology*, Shanghai, October 2011.
20. *2010 Low Carbon Ecological City: From Evaluation, Planning to Design, *U.S.-China Low Carbon City Mayors’ Workshop*, Beijing, July 2010.
21. *2010 Low Carbon Ecological City: From Evaluation, Planning to Design, *Future City Forum, New Taipei City Government*, June 2010.
22. 2008 Asian New Downtowns: Case Studies of Planning Decision Makings in Singapore, Taipei and Shanghai, in *International Conference on City Competitiveness*, Chonghua University, Hsinchu, Taiwan, October 2008.
23. 2007 Featured speech, “Sustainable design and development in Asian metropolis: analytical tools, design intervention and development mechanisms”, in international

conference of *Town Development: Building the New Metropolitan*, Manila, September 2007.

24. 2006 Large-scale urban and landscape design as the catalyst of eco-city development, *The Second Mega-cities International Conference: Challenges in Sustainability for Asian Cities*, Hong Kong University, Guangzhou University & CIB (International Council on Research and Innovations in Building and Construction), Guangzhou, China, December, 2006.
25. 2006 Design with the second nature: ecological development strategies in intensive urban environment, *Kaohsiung 2006 City Forum*, Kaohsiung City Government, Taiwan, November 2006.
26. 2006 Sustainable urban design in Asia, in *HPAIR 2006, The Harvard Project for Asian and International Relations 2006 Annual Academic Conference*, Singapore, August 2006.
27. 2005 Sport park: a catalyst of eco-city development, *The Main Stadium for 2009 World Games International Conference*, Kaohsiung City Government, Kaohsiung, Taiwan. 16 September 2005.
28. 2004 Asian New Downtowns: The Urban Transformation of the Central City Areas of Singapore, Kaohsiung and Shanghai in *the 2nd Land Research Conference*, National Cheng Chi University, Taipei, Taiwan, September 25-26, 2004.
29. 2002 Shaping Asian Urban Skylines: Reflections on Global Strategies and Policies of Singapore Downtown Design and Development, *National Planning Forum 2002*, National Cheng Kung University, Taiwan.

(Invited Conference Presentations, in addition to those listed under conference papers)

1. *2024 Invited talk, "Future City Development in Tokyo and Atlanta Using data analytics and technologies to drive development for carbon neutrality", Real Estate Development (RED) Conference: Building Tomorrow, February 7, 2024, Georgia Tech, Atlanta.
2. *2022 Invited talk, "Smart mobility by data analytics and urban design" in HBCU (Historically Black colleges and universities) - Georgia Tech Researcher Forum, May 17, 2022, Georgia Tech, Atlanta.
3. *2021 Panel organizer and presenter, "Future Airport City Systems Design" in *Podcar City Conference*, panelists including Dimitri Mavris and Michael Balchanos, Gulsah Akar, Gerald McDowell and Pally Sattler, December 10, 2021, Atlanta.
4. *2021 Panelist of the "Sustainable Cities, Smart Cities, and Designing Urban Systems" in *Princeton Energy Conference 2021: Charging Towards Net Zero*. November 4-6, 2021, Princeton University, New Jersey (virtual meeting).

5. *2021 Invited speech in *China Eco-Cities Forum: Eco-cities Exploration and Innovation for Carbon Mitigation and Neutrality*, October, 30-31, 2021, China Eco-City Academy, Beijing, China (virtual meeting, postponed due to the pandemic).
6. *2021 Panelist in *Virtual Symposium for Journal of the American Planning Association: Special Issue on Community Design and Revitalization for Promote Health*. Organized by Nisha Botchwey, Catherine Ross, Bruce Stiffler; Other panelists include: Matthew Trowbridge, Noreen McDonald, Quency Phillips, Samina Raja, Mitchell Silver, January 28, 2021.
7. *2019 Beyond Japanese Metabolism: Urban Systems Design as a Model for Future Cities, in *Public Seminar on Urban Systems Design and Smart Cities*, May 16, 2019, organized by Department of Urban Engineering of the University of Tokyo, City Lab, Tokyo
8. *2019 From Japanese Metabolism to Japanese Smart Cities? In *Kyoto-Shenzhen Deep Decarbonization Project Symposium*, May 13, 2019, Kyoto.
9. *2018 Smart city - a place making of post-cyber space, in *International Smart Cities Panel at APA's 2018 National Planning Conference*, with Richard B Stephens, John Acres, Vatsal J. Bhatt and Irena Itova, April 21–24, 2018, New Orleans.
10. *2017 A Collaborative Framework of the Eco Smart City Project Using Smart Materials, in *Covestro - Tongji Sustainable Development Forum 2017*, Tongji University, December 15, 2017.
11. *2017 Urban Systems Design (USD) as a Design: An integrated model of smart city – Misono 2020 Olympics Site Tokyo in *the Smart City Symposium*, The University of Tokyo. March 21, 2017.
12. *2016 Shaping Sustainable Urban Systems in *the Workshop on Practice and Research in Urban Sustainability Assessment*, Department of Urban Engineering, School of Engineering, The University of Tokyo. August 17-18, 2016.
13. *2015 Energy resilient urban systems: a design perspective, in *2015 International Symposium on Ecological Urban Design*, organized by Sino-U.S. Eco Urban Lab, Georgia Institute of Technology and Tongji University, 5-6 June 2015, Shanghai.
14. *2014 Eco Area Ratio (EAR): A planning approach to energy performance and carbon reduction assessment for ecological urban systems, in *Green Human Habitat Forum*, organized by UNEP and CMG, Kunming, China, November, 15, 2014.
15. *2013 Eco Area Ratio (EAR): An energy planning tool for ecological urban revitalization and transformation, in *Wicked Problem Symposium*, organized by the Journal *Landscape and Urban Planning* and College of Environmental Design, UC Berkeley, October 26, 2013.
16. *2013 Global benchmarking for low carbon urban design: A forward-looking modeling approach to Geodesign, invited presentation (by poster presentation due to time conflict),

- in *Geodesign Summit Europe 2013*, GeoFort, Herwijnen, Netherlands, September 19-20, 2013.
17. *2013 Global waterfront models of free economic zone: London, New York, Shanghai, Singapore and Kaohsiung, in *iCities Conference 2013*, National Cheng-Kung University, Taiwan, May 24-25, 2013.
 18. *2013 New urbanism, landscape urbanism and beyond, in *Greenprints Conference 2013*, with Ellen Dunham-Jones, Atlanta, March 13-14, 2013.
 19. *2012 Cities as flows: scale, complexity and stochastic processes, in *2012 Conference on Healthy Architecture and Sustainable Environment*, National Taipei University of Technology (NTUT), Taipei, Taiwan, June 27, 2012.
 20. *2012 Cities as flows: five propositions and their design challenges, in *Sustainable Urban Infrastructure Workshop*, organized by Georgia Institute of Technology and Tianjin University, Tianjin, China, June 14-16, 2012.
 21. *2010 Design challenge of ecological urban systems: scale, complexity and stochastic process, in *the 5th International Conference on Urban and Regional Planning: The Transformation of Urban Development Model in China—Ecological, Low-carbon and Digital City*, organized by Ministry of Housing and Construction of China, Chihuahangdao, China, June 22-23, 2010.
 22. *2010 Eco city-region planning and Eco-infrastructure for Bay Areas: Implications to PRD region, in *Forum of Guangdong-Hong Kong-Macau Regional Development of Pearl River Delta (PRD)*, organized by Guangdong Provincial Government, Guangzhou, June 9-10, 2010.
 23. *2010 Ecological Urbanism: Scale, Complexity and Stochastic Processes in *Global Alliance of Technological Universities: First workshop on Sustainable Urban Solutions* (as one of the two representatives from Georgia Tech to speak), in Shanghai Jiaotong University, May 2010.
 24. 2008 Asian New Downtowns: Case Studies of Planning Decision Makings in Singapore, Taipei/Kaohsiung and Shanghai, in *International Symposium on Cities Competition*, Chung-Hua University, Hsinchu, Taiwan, October 24, 2008.
 25. 2007 From Taipei Eco Urban Master Plan to the Third Ecology Proposition in *International Symposium on Planning and Design Education*, National Taiwan University, Taipei. December 29, 2007.
 26. 2007 Planning the third ecology: an approach to healing ecological effects of urban transformation, in *A Quarter Century of Physical and Institutional Transformation in Urban China*, Asian Research Institute, Singapore, March 2007.
 27. 2005 Revitalizing waterfronts of Singapore's Marina Bay and Kallang Basin: A reflection on urban ecological perspective, in *International Conference of Urban River:*

Restoration and Vision. Kaohsiung: National Kaohsiung Ocean University, Kaohsiung, Taiwan, December 15-16, 2005.

28. 2004 Designing with nature in intensive urban environment: three urban ecological scenarios of Kaohsiung's Zao-Zai wetland park and the surrounding area of high-speed rail terminal, in *International Workshop on Eco-tech and Artificial Wetland*, National Sun Yat-Sen University, Kaohsiung, Taiwan, October 23-24, 2004.
29. 2004 Architecture and urban design education in Singapore, in *International Conference on Planning Education*, National Taiwan University, July 26-27, 2004.
30. 2002 Applying ecosystem concepts to the management of industrial areas, in *International Symposium on the Sustainable Management Mechanism for Industrial Parks*. Organized by Industrial Development Bureau, Ministry of Economic Affairs and National Cheng Kung University, Tainan, Taiwan. With Boon Lay Ong, September 20, 2002.
31. 2001 The Integration of Landscape Ecology and City Planning: A Case Study of Eco-Taipei 2025 Master Plan, in *2001 Symposium of Landscape Ecology and Sustainable Urban and Rural Development*, with Hung-Kai Wang, National Taiwan University, Taipei, April 1, 2001.

(Invited lectures in Universities, Institutions, Governmental Agencies in the U.S.)

1. *2023 Georgia Tech BBISS Seminar, talk on “Urban Systems Design: Incorporating data analytics into design for urban carbon neutrality in Tokyo”, September 7, 2023, organized by Brook Byers Institute for Sustainable Systems, Georgia Tech.
2. *2023 Panelist in *Smart Cities Systems Design Panel: Tokyo, Singapore, Atlanta*, Georgia Tech College of Design. Other panelists include: Dimitri Mavris (Georgia Tech School of Aerospace Engineering), Akito Murayama (The University of Tokyo), Subhro Guhathakurta (Georgia Tech School of City and Regional Planning) and Ingeborg Rocker (Georgia Tech School of Architecture), February 16, 2023, School of City and Regional Planning, Georgia Tech.
3. *2022 Beyond Land Use Maps: GIS for Urban & Regional Planning in Higher Education Webinar, with Dr. Barbara Faga, Rutgers University, Environmental Systems Research Institute, Inc. (ESRI), June 26, 2022.
4. *2021 Panelist in *SMARTer Together Webinar: Autonomous Aerotropolis: A Digital Twin Model for Enhancing Smart and Connected Communities*. Organized by Georgia Tech Smart Cities and Inclusive Innovation; Other panelists include: Dimitri Mavris (Georgia Tech School of Aerospace Engineering), Kirk Talbott (MARTA) and Kenneth Williams (Hartsfield-Jackson Atlanta Intl Airport), March 4, 2021.
5. *2019 Georgia Tech Sustainability Show Case, talk on “Smart Commons: GT Shenzhen smart campus research”, October 28-30, 2019, organized by Brook Byers Institute for Sustainable Systems.

6. *2018 **MIT, SPURS 50th Anniversary Conference**, Panel on “Does Technology Interfere or Facilitate Good Practice?”, MIT Media Lab, Cambridge, October 12, 2018.
7. *2018 Georgia Tech Smart City Digital Twin Summit, Georgia Tech Smart Shenzhen Campus and Panel, November 2, 2018, Georgia Institute of Technology.
8. *2018 Georgia Tech College of Design Research Forum, Modeling Urban Design with Energy Performance, in *the Panel of Planning Energy-Efficient Buildings and Cities*, with G Augenbroe, S Guhathakurta and E Mallen, March 3, 2018, Georgia Institute of Technology.
9. *2018 Georgia Tech College of Design Research Forum, An Urban Design Perspective, in *the Panel of The Digital Twin: Intelligent and Responsive Environments*, with D Shelden, S Guhathakurta, P Pishdad-Bozorgi and J Sanford, January 25, 2018, Georgia Institute of Technology.
10. *2014 Centers of Disease Control and Prevention (CDC), Design for Urban Metabolism, February 25, 2014.
11. *2012 University of Pennsylvania, Department of City and Regional Planning, Cities as flows: scale, complexity and stochastic processes, February 13, 2012.
12. *2009 Northeastern Session of the Mayor's Institute on City Design, invited talk as the resource team member, Ecological urbanism: four issues for policy makers, Boston 2009.
13. 2007 MIT, Department of Urban Studies and Planning, invited talk at the SPURS Seminar, The third ecology proposition: an approach to sustainable design and development in five Asian urban settings, October 2007.
14. 2007 Yale University, School of Architecture and School of Forestry and Environmental Studies, invited lecture, The third ecology proposition: an approach to sustainable design and development in five Asian urban settings, October 2007.
15. 2006 Yale University, School of Forestry and Environmental Studies, invited lecture, Planning the second nature: applying landscape ecology to analysis and planning of urban environment, April 2006.

(Invited lectures in Universities and Governmental Agencies outside of the U.S.)

1. *2023 D-School of the National Taiwan University, Future cities for carbon neutrality, November 2, 2023, Taipei, Taiwan.
2. *2023 The Cambridge Centre for Advanced Research and Education in Singapore (CARES), the University of Cambridge, invited lecture, Urban systems design: An approach to designing smart city living lab for carbon neutrality, August 7, 2023, Singapore.

3. *2022 National Development Commission, Taiwan Central Government, invited lecture, Technology-driven Future Cities Development for Communities, December 27, 2022, Taipei, Taiwan.
4. *2022 Center for Spatial Information Science of the University of Tokyo, invited lecture, Urban Systems Design: Incorporating Data Analytics into Design for Future Cities Development, November 29, 2022, Tokyo, Japan.
5. *2022 Department of Urban Engineering of the University of Tokyo, invited lecture, Smart Urbanism: Learning from Tokyo's Legacy, in Smart Urbanism Seminar, October 14, 2022, Tokyo, Japan.
6. *2022 Kaohsiung City Government, invited lecture, Zero Carbon Smart City Development Strategies, August 10, 2022, Kaohsiung, Taiwan.
7. *2022 Taipei City Government, invited lecture for the Mayor's cabinet, Smart City Development Strategies Facing Climate Changes, July 26, 2022, Taipei, Taiwan.
8. *2020 Gadjah Mada University (UGM, Universitas Gadjah Mada) of Indonesia, Architecture Study Program, invited lecture and panel discussion, Open Curriculum in Architecture Education System, November 26, 2020 (on line).
9. *2020 Chinese University of Hong Kong, Centre for Housing Innovations, invited guest lecture, Urban Energy and Metabolism, April 24, 2020, Hong Kong (on line).
10. *2019 Taipei City Government, invited public lecture, A framework of smart cities: urban systems design, November, 20, 2019, Taipei.
11. *2019 Shanghai Jiaotong University, School of Design, invited lecture, Urban Systems Design: Shaping new urban form of smart cities, October 14, 2019, Shanghai.
12. *2019 Hong Kong University of Science and Technology, Department of Civil and Environmental Engineering, invited lecture, Urban Energy Systems Design, June 21, 2019, Hong Kong.
13. *2019 Guangdong Urban Planning Institute, invited talk: Urban systems design driven by future city visioning, with Dr. Yoshiki Yamagata, June 16, 2019, Guangzhou.
14. *2019 Tamkang University, Department of Water Resources and Environmental Engineering, invited lecture, Design for Resilient Urban Systems, June 4, 2019, Taipei.
15. *2019 University of Tokyo, Department of Urban Engineering, invited lecture, From Urban Design to Urban Systems Design, May 9, 2019, Tokyo.
16. *2018 Singapore Urban Redevelopment Authority (URA), invited lecture, "Design for smart urban systems", December 14, 2018, Singapore.

August, 2023

17. *2018 Hong Kong University, Faculty of Architecture, invited lecture “Data-driven Urban Design”, November 8, 2018, Hong Kong.
18. *2018 Hong Kong University of Science and Technology, Division of Environment and Sustainability, “Design for Sustainable Urban Systems”, December 3, 2018, Hong Kong.
19. *2018 Shenzhen City Government, R&D Center of Housing and Construction, invited lecture “Urban systems Design in IoT Era” August 20, 2018, Shenzhen.
20. *2017 Huazhong Institute of Science and Technology, School of Architecture and Urban Planning, invited lecture “Urban Systems Design (USD): An integrated model of smart city – Misono area of Tokyo 2020 Olympics Site”, May 2017, Wuhan China.
21. *2016 Guangdong Urban Planning Institute, invited talk: “From Eco City to Resilient Urban Systems Design”, August 3, 2016, Guangzhou.
22. *2016 Tongji University, invited talk “Ecological Urban Regeneration: Connecting Eco-Performance Modeling to Design Decisions” at *2016 Tongji CAUP International Summer School: Regeneration of Urban Communities with a New Spatial Paradigm*, August 11, 2016, Shanghai.
23. *2014 National Cheng-Chi University, invited lecture “Global Waterfront Movement from 1970s’: London, Shanghai, Singapore, New York, Kaohsiung and Taipei” in *Cities for the Future Symposium*, March 11, 2014, Taipei.
24. *2014 Guangdong Provincial Government and Guangdong Urban Planning Institute, invited talk in *the Pearl River Delta Forum: “Eco Urban Design”* (with Professors Nancey Green Leigh, Richard Dagenhart, Bruce Stiftel), March 22, 2014, Guangzhou, China.
25. *2014 Tongji University, College of Architecture and Planning, invited lecture “Renewable Urbanism: Agenda of Eco Urban Lab in U.S. and China”, in (with Professor Steve French), January 2014.
26. *2014 Shanghai Urban Planning and Design Institute, Shanghai Municipal Government, invited talk “Renewable Urbanism: Agenda of Eco Urban Lab in U.S. and China” (with Professor Steve French), January 2014.
27. *2013 Tongji University, College of Architecture and Planning, invited lecture “Global waterfront models of free economic zone: London, New York, Shanghai, Singapore and Kaohsiung”, Shanghai, June 2013.
28. *2013 National Taipei University of Technology and Harvard GSD joint workshop on *Taiwanism*, invited lecture “Cities as flows: eco systems design studio 2005-2012”, Taipei, March 23, 2013.
29. *2012 Tianjin University, School of Architecture, invited lecture, “Cities as flows: scale, complexity and stochastic processes”, Tianjin China, June 2012.

30. *2012 National Taiwan University (NTU), Graduate Institute of Building and Planning, invited lecture "Cities as flows: scale, complexity and stochastic processes", Taipei, June 2012.
31. *2012 National Chiao-Tung University (NCTU), School of Architecture, invited lecture "Cities as flows: scale, complexity and stochastic processes", Hsinchu, Taiwan, June 2012.
32. *2011 Tongji University, College of Architecture and Planning, invited lecture "Low energy urban systems design: scale, complexity & stochastic process", Shanghai, October 2011.
33. *2011 Huazhong Institute of Science and Technology, School of Architecture and Urban Planning, invited lecture "From landscape urbanism, ecological urbanism to renewable urbanism", Wuhan China. March 2011.
34. *2010 Taipei City Government, Urban Redevelopment Authority, invited lecture "From Biophilia to high performance landscape and urban design" in *Urban Regeneration Workshop*, Taipei, October 2010.
35. *2010 Huazhong Institute of Science and Technology, School of Architecture and Urban Planning, invited lecture "Ecological urbanism: scale, flow and design", Wuhan China, May 2010.
36. *2009 Tongji University, Department of Urban Planning, invited lecture "Sustainable urban form and design" (with Professor Richard Dagenhart), Shanghai, December 2009.
37. *2009 National Cheng-Kung University, Department of Urban Planning, invited lecture "Ecological urbanism: scale, flow and design", Tainan, Taiwan, November 2009.
38. 2007 Jurong Town Corporation (JTC), Singapore Government, invited lecture "The third ecology proposition: an approach to sustainable design and development in five Asian urban settings", Singapore, November 2007.
39. 2006 Kaohsiung City Government, invited lecture "Design with the second nature: ecological development strategies in intensive urban environment", in *Kaohsiung 2006 City Forum*, Taiwan, November 26 –27, 2006.
40. 2006 The Asian Coalition for Architecture and Urbanism (ACAU), Singapore Workshop of Public Waterfronts in the Asian Metropolis, as a studio leader and speaker, Singapore, July 2006.
41. 2005 Delft University of Technology (TU Delft), invited lecture "Knitting the city fabric" at the First International Join Design Workshop, European Postgraduate Masters in Urbanism, Netherlands, November, 2005.
42. 2005 Taipei City Government, Urban Development Bureau, invited lecture "Three Asian models of planning decision-making: planning downtown Singapore, Kaohsiung and Shanghai", Taipei, July 21, 2005.

43. 2002 Tainan City Government, Urban Development Bureau, invited lecture “Urban Design Experiences of Singapore Downtown Area”, in *Annual Exhibition of Community Buildings*, Tainan, Taiwan, 2002.

E. Grants and Contracts

E1. As Principal Investigator

1. *Smart Commons: A co-design workshop for Georgia Tech’s global campus

Agency/Company: Georgia Tech Foundation (Denning Global Engagement Seed Fund)

Total Dollar Amount: \$15,000

Role: PI

Collaborators: Debra Lam

Period of Contract: 7/1/2018 – 6/30/2019

Candidate’s Share: 100%

2. * Eco Urban Lab, Georgia Tech and Tongji University

Agency/Company:

- Denning Global Engagement Seed Fund (Global FIRE), the Office of Vice-Provost for International Initiatives, Georgia Institute of Technology
\$30,000

- Dean’s Office, College of Design, Georgia Institute of Technology
\$15,000

Collaborators:

- College of Design, Georgia Tech: Steven French, Alan Balfour, Richard Dagenhart, Ellen Dunham-Jones, Nancey Green Leigh, Bruce Stiftel, Subhrajit Guhathakurta. Catherine Ross, Daniel Castro, Charles Eastman, John Crittenden (faculty participating in exchange or visitation in Tongji University during 2013-2016)

- College of Architecture and Urban Planning, Tongji University

Period:

- 8/1/2013 – 6/31/2015

3. *Bayer Chair Professorship at United Nation Environment Program (UNEP) – Tongji Institute of Environment for Sustainable Development (2015 renamed to Covestro)

Agency/Company: Bayer

Total Dollar Amount: \$450,000 EURO (2014-2017), \$150,000 EURO each fiscal year

Role: PI (as the visiting endowed Bay Chair Professor at UNEP- Tongji Institute)

Period of Contract: 2014 – 2018

4. *2014 Shuidong Bay Waterfront City Design Studio, Guangdong China

Agency/Company: Guangdong Urban Planning and Design Institute

Total Dollar Amount: \$40,000
Role: PI
Collaborators: Nancey Green Leigh, Richard Dagenhart
Period of Contract: 1/1/2014 – 5/1/2014
Candidate's Share: 100%

5. *Strategic Planning of Asian New Bay Area, Kaohsiung Taiwan

Agency/Company: Kaohsiung City Government
Total Dollar Amount: \$30,000
Role: PI
Collaborators: Nancey Green Leigh, Richard Dagenhart
Period of Contract: January to May 2013
Candidate's Share: 100%

6. *Low Carbon Urban Design for the City of Macau

Agency/Company: Macau Urban Planning Institute
Total Dollar Amount: \$30,000
Role: PI
Collaborators: Nil
Period of Contract: 3/1/2011 – 7/31/2011
Candidate's Share: 100%

7. *Assessing Solar Availability of Urban Form Using 3D GIS

Agency/Company: Georgia Tech Foundation (GT FIRE)
Total Dollar Amount: \$13,800
Role: PI
Collaborators: Nil
Period of Contract: 9/1/2009 – 5/31/2010
Candidate's Share: 100%

8. Asian new downtowns: urban transformation of central city areas in Singapore, Taipei and Shanghai

Agency/Company: National University of Singapore
Total Dollar Amount: \$135,600 (169,855 SGD)
Role: PI
Collaborators: Chye Kiang Heng, Jieming Zhu
Period of Contract: 1/1/2005 to 6/30/2008
Candidate's Share: 100%

9. GIS-based Design Support System in Tropical Urban Environment

Agency/Company: National University of Singapore
Total Dollar Amount: \$71,800 (89,964 SGD)
Role: PI

Collaborators: Stephen Wittkopf
Period of Contract: 8/22/2002 – 5/21/2006
Candidate's Share: 100%

E2. As Co-Principal Investigator

1. *Use of Domestic Wastewater for Food Production

Agency/Company: USDA
Total Dollar Amount: \$4,838,263
Role: Co-PI
Collaborators: Yongsheng Chen (PI), Valerie Thomas (Co-PI), Marc Weissburg (Co-PI),
Kay Husband (Co-PI)
Period of Contract: 7/1/2018 – 6/30/2023
Candidate's Share: ~5% (\$240K)

2. *ERC Planning Grant: Engineering Research Center for Urban Agricultural Infrastructure
Systems

Agency/Company: National Science Foundation
Total Dollar Amount: \$100,000
Role: Co-PI
Collaborators: Yongsheng Chen (PI), John Crittenden (Co-PI), Kaye Husbands (Co-PI),
Zhaohui Tong (Co-PI)
Period of Contract: 8/1/2019 – 8/31/2020 (extended to 2021)
Candidate's Share: ~20%

3. *Sustainable Housing through Holistic Waste Stream Management and Algal
Cultivation

Agency/Company: National Science Foundation
Total Dollar Amount: \$1,644,957 (Georgia Tech portion \$800,000)
Role: Co-PI
Collaborators: PI: Ben Stuart (Ohio University), Daniel Castro and Charles Rudolph
(Georgia Tech)
Period of Contract: 8/22/2012 – 5/21/2016 (extended to 6/21/2017)
Candidate's Share: 33% of Georgia Tech portion

E3. As Senior Personnel or Contributor

N/A

E4. Pending Proposals

E5. Proposals Submitted but Not Funded (Last Two Years)

1. CAREER: Research and Education in Energy-Sharing Built Environment through Multiscale Generative Design toward Decarbonized and Socially Equitable Communities

Agency: National Science Foundation
Role: Consultant
Collaborator: PI: Soowon Chang (Purdue University)
Total Proposal Amount: \$563,124
Submitted on July 2023
Current Status: Decline

2. Exploring Human, Built Environments, and Carbon Emissions (HBC) Interaction Theory for Decarbonizing Regional Infrastructure Systems

Agency: National Science Foundation
Role: Consultant & Collaborator
Collaborator: PI: Soowon Chang (Purdue University)
Total Proposal Amount: \$344,420
Submitted on December 2022
Current Status: Decline

F. Other Scholarly and Creative Accomplishments

*2010 Perry Yang's urban design work was published and featured in the January 2010 Issue "Ecological Urbanism" in *WA (World Architecture)*, 54-64, 2010/01. (WA is a leading peer-reviewed architecture journal in China published by Tsinghua University.)

G. Societal and Policy Impacts

Yang's scholarly work on eco urban design has been conducted through publications and design competitions. Some of them were further developed to have broader societal and policy impacts.

1. Ecological urban design for venues of international sport events

Yang was the chief planner of the 2009 World Games Park, opened in Kaohsiung in July 2009 and featured by CNN as an "eco-friendly venue". The design proposed the first solar-powered stadium of the world that accommodates 40,000 permanent and 15,000 temporary spectator seats. His eco design for *the 2009 World Games Park* led to design invitations of other international sport events, including the 2022 Asian Games Athletes Village design competition in Hangzhou, and a smart city project at Misono, one of the Tokyo 2020 Summer Olympics sites. The Tokyo project was conducted as sponsored urban design studios for Georgia Tech's School of City and Regional Planning and School of

Architecture from 2017, in collaboration with Misono Urban Design Center of the City, University of Tokyo and Global Carbon Project.

2. Smart city and green redevelopment policy for the City of Taipei, evidenced by being appointed as an advisor to the Mayor

Yang was appointed an advisor to the Mayor, the City of Taipei from December 2019 to 2022 for the urban policy in areas of smart city and urban data center. He conducted planning project for green revitalization of inner-city neighborhoods along ten-kilometer long Danshui Riverfront of the City from 2013 to 2015 using ecological performance-based approach to incentivize communities to redevelop existing urban housing environment and public spaces. One planning mechanism proposed in the process is “Eco Area Ratio (EAR)”, an energy zoning tool to mitigate carbon emission for urban redevelopment of the city.

H. Other Professional Activities

Member of American Planning Association, from 2009 to Present
Registered Urban Planner, Taiwan, from 1997 to Present

V. Education

A. Courses Taught

(Course taught during the period since the receipt of tenure at Georgia Tech)

| Semester, Year | Course Number | Course Title | Number of Students |
|----------------|---------------------------|---------------------------------------|--------------------|
| Spring 2024 | CP6053 | Urban Design Studio | 7 |
| Spring 2024 | ARCH4017 | Architecture Design Studio | 5 |
| Spring 2024 | CP6552/ARCH6447/ARCH4803 | Design of Smart Urban Systems | 39 |
| Fall 2023 | CP8873 C/AE8803/ARCH8803 | Smart City Workshop | 20 |
| Summer 2023 | CP6962 | Capstone: Smart City. | 6 |
| Spring 2023 | CP6053 | Urban Design Studio | 12 |
| Spring 2023 | ARCH6050 | Architecture Design + Research Studio | 6 |
| Spring 2023 | CP6552/ARCH6447/ARCH4803 | Design of Smart Urban Systems | 38 |
| Fall 2022 | CP8873 C/AE8803/ARCH8803 | Smart City Workshop | 12 |
| Spring 2022 | CP6053 | Urban Design Studio | 8 |
| Spring 2022 | ARCH6050 | Architecture Design + Research Studio | 4 |
| Spring 2022 | CP6552/ARCH6447/ARCH4803 | Design of Smart Urban Systems | 41 |
| Fall 2021 | CP8873 C/AE8803/ARCH8803 | Smart City Workshop | 14 |
| Spring 2021 | CP6053 | Urban Design Studio | 9 |
| Spring 2021 | ARCH6050 | Architecture Design + Research Studio | 4 |
| Spring 2021 | CP6836C/ARCH6447/ARCH4803 | Urban Ecological Design | 28 |
| Fall 2020 | CP8873 C | Smart City Workshop | 10 |
| Spring 2020 | CP6053 | Urban Design Studio | 7 |

| | | | |
|-------------|----------------------------------|---------------------------------------|----|
| Spring 2020 | CP6836C/ARCH6447/ARCH4803 | Urban Ecological Design | 20 |
| Fall 2019 | College of Design Course Release | | * |
| Spring 2019 | CP6053/ARCH3855/4855 | Urban Design/Architecture Studio | 8 |
| Spring 2019 | CP6836C/ARCH6447/ARCH4803 | Urban Ecological Design | 25 |
| Fall 2018 | ARCH8803/CP8873 | Urban Design Workshop | 8 |
| Spring 2018 | CP6836C/ARCH6447/ARCH4447 | Urban Ecological Design | 18 |
| Spring 2018 | CP6052 | Urban Design Studio | 12 |
| Spring 2018 | ARCH8886 | Architecture Design + Research Studio | 6 |
| Spring 2017 | CP6836C/ARCH6447/ARCH4803 | Urban Ecological Design | 19 |
| Spring 2017 | CP6052 | Urban Design Studio | 13 |
| Spring 2017 | ARCH6072 | Architecture Design + Research Studio | 4 |
| Spring 2016 | CP6052/ARCH6072 | Urban Design/Architecture Studio | 10 |
| Spring 2016 | CP6836C/ARCH6447/ARCH4803 | Urban Ecological Design | 21 |
| Spring 2015 | CP6052/ARCH6072 | Urban Design/Architecture Studio | 11 |
| Spring 2015 | CP6836C/ARCH6447 | Urban Ecological Design | 18 |
| Fall 2014 | CP8823PY/ARCH8823 | Site Planning & Urban Simulation | 11 |

*To receive College of Design Course Release for Research grant in Fall 2019

B. Individual Student Guidance

B1. Ph.D. Students

(Current Ph.D. students)

1. *Hina Irfan Ahmed (from August 2023), School of City and Regional Planning
2. *Abdulrahman H Alorabi (from August 2022), School of Architecture

(Ph.D. Students Graduated)

1. *Steven Jige Quan, Ph.D., August 2011 – June 2016
 Ph.D. Dissertation: *Density and Energy Performance of Solar Powered Buildings in the Urban Context*, School of City and Regional Planning, Georgia Institute of Technology
 Current Position: Assistant Professor at Graduate School of Environmental Studies, Seoul National University, South Korea, from June 2016 to Present.
3. Ze Li, Ph.D. (August 2003 – May 2007)
 Ph.D. Dissertation: *Urban Redevelopment in Changshoujie, Shanghai: An Institutional Analysis*. (Department of Architecture, National University of Singapore.)
 Primary Supervisor: Dr. Perry Yang; Co-Supervisor: Dr. Sun Sheng Han (University of Melbourne)
 Current Position: Associate Professor, Department of Urban Planning, School of Architecture, Tianjin University, China, from June 2007 to Present.
4. Archana Sharma, Ph.D. (August 2001 – May 2007)
 Ph.D. Dissertation: *Articulating the Symbiotic Construct of Eco-Industrial Park: Strengthening Through A Modified Landscape Design Strategy*
 (Department of Architecture, National University of Singapore.)
 Major Supervisor: Dr. Boon Lay Ong; Co-Supervisor: Dr. Perry Yang

- Current Position: Associate Professor, School of Architecture and Planning, Morgan State University, from January 2012 to Present
5. Simon Yanuar Putra, Ph.D. (August 2002 – May 2006)
Ph.D. Dissertation: *A Perceptual Evaluation of Urban Space Using GIS-Based 3D Volumetric Visibility Analysis* (Department of Architecture, National University of Singapore)
Primary Supervisor: Dr. Perry Yang
Current Position: Senior GIS Specialist, Abu Dhabi Ports Company (ADPC), United Arab Emirates
 6. Kuo-Wei Chiu, Ph.D. (August 2007 – January 2013)
Ph.D. Dissertation: *An Intelligible Urban Form of Structural Syncretism: Physical Transcendence and Cosmological Motif in Spatial Datum of Northeast Taiwan* (Department of Architecture, National University of Singapore)
Primary Supervisor: Dr. Johanna Widodo; Co-Supervisor: Dr Chye Kiang Heng (as his previous Ph.D. supervisee from August 2007, transferred to Dr. Widodo in 2008 during my transition to Georgia Tech)
Current Position: Assistant Professor, Department of Architecture, Tunghai University, Taiwan, from June 2013 to Present

B2. M.S. Students (Indicate Thesis Option for Each Student)

(*MCRP and MS Students Graduated from Georgia Institute of Technology)

1. Sivakumar, Siddharth (August 2020 – December 2023)
Option Paper: Solar Envelope in Data-Driven Urban Design: Optimizing Energy Production.
2. Miles Rawlins (August 2021 – May 2023)
Option Paper: Finding a Nice Place to Sit: A Case Study of Midtown's Public Space
3. Yan Xie (August 2021 – May 2023)
Option Paper: Nihonbashi Retail Space and Shopping Activity Research: Daily and Pandemic
4. Steven Aceto (August 2021 – May 2023)
Option Paper: The Denser the City, the Healthier the Region - Understanding the Relationship between Landscape-Scale Planning Metrics and Sustainable City Function and Design
5. Yuxiang Zhao (August 2021 – May 2023)
Option Paper: Tokyo Nihonbashi Visual Walkability Analysis
6. Umar F Dar (August 2021 – May 2023)
Option Paper: Atlanta Aerotropolis: Understanding the new form of urban development in the Cityscape
7. Lu Chen (August 2020 – July 2022)
Option Paper: Urban Analytics Responding to Challenges of Big Data Application
8. Hala Alfalih (August 2020 – January 2022)
Thesis, as committee member: Urban thermal diagnostics and extreme heat vulnerability in underrepresented *communities* (MS Architecture Program)
9. Sanjana Zahin (August 2019 – December 2021)
Option Paper: An Exploratory Research on Urban Economy and Industrial Land Suitability in Aerotropolis Atlanta

10. Andrew Dunham (August 2019 – May 2021)
Option Paper: Hidden Hydrology: The reclamation and reacquaintance of post-industrial habitats and landscape in urban contexts through design at Lake Calumet
11. Charles Stickels (August 2019 – May 2020)
Option Paper: *Autonomous Vehicle Technology: Best Practices, Implications, and Preparedness*
12. Michael Tobby (August 2015 – May 2018)
Dual degree students of Georgia Tech and Tongji University
Thesis: *Linking MPBN and System of System Thinking: To Improve Outcomes in Urban Environments*
Current Position: Ph.D. student at University of Washington, Seattle
13. Zach Lancaster (August 2016 – May 2018)
Option Paper: *Information Theory as a Measure of Sociodemographic Change*
Current Position: Ph.D. student at Georgia Tech
14. Yanlin Wu (August 2016 – May 2018)
Option Paper: *Extending the Geodesign Framework for Small-scale Urban Ecological Design Project*
15. Andyan Diwangkari (August 2016 – May 2018)
Option Paper: *Urban Form and Neighborhood Vulnerability to Climate Change: Case Study of Jakarta, Indonesia*
16. Yihan Wu (August 2014 – May 2016)
Option paper: *A New Geodesign and Parametric Design Paradigm for Human-Energy-Water Interactive System Planning*
Current Position: Ph.D. student at Wuhan University
6. Dzung Nguyen (August 2011 – December 2012)
Option paper: *Size, shape and connectivity: The impacts of urban development on hydrological regime in Ho Chi Minh City*
Current Position: Senior planning, CPG Consultants Pte Ltd., Singapore
7. Mike Cutno (August 2009 – May 2011)
Option paper: *Experiencing Mu: Urban Agriculture for the Peaceful Dissolution of the City in Japan*
Current Position: Sustainability consultant, Tokyo

(Master Students Graduated from National University of Singapore)

1. Shubhalaxmi Agrawal, 2008, Master of Art in Urban Design, Dissertation in Urban Design, Department of Architecture, National University of Singapore
2. Faysal Kabir Shuvo, 2008, Master of Environmental Management Thesis: *Morphological And Physiological Analysis for Measuring Urban Environmental Performance* (School of Design and Environment, National University of Singapore)
3. Ong Qi Rong, 2008, Master of Architecture Dissertation, Department of Architecture, National University of Singapore
4. Lew Send How, 2008, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore
5. Tan Wan Hui, 2007, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore
6. Chen Sin Mei, 2007, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore

7. Sam Wei Yee, 2007, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore
8. Pang Mung Ching, 2007, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore
9. Andrei Johandiputra, 2007, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore
10. Wang Mou Lin, 2007, Master of Art in Urban Design, Dissertation, Department of Architecture, National University of Singapore
11. Subashini Kulothungan, 2007, Master of Art in Urban Design, Dissertation, Department of Architecture, National University of Singapore
12. Maung Ngwe Soe, 2007, Master of Art in Urban Design, Dissertation, Department of Architecture, National University of Singapore
13. Chua Kwan Seng Christopher, 2006, Master of Architecture, Dissertation, Department of Architecture, National University of Singapore
14. Foo Siew Mun, 2006, Master of Architecture Dissertation, Department of Architecture, National University of Singapore
15. Li Yu Zhou, 2006, Master of Architecture Dissertation, Department of Architecture, National University of Singapore
16. Ritu Verma, 2006, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
17. Sembian Vijay, 2006, Master of Art in Urban Design MAUD Dissertation, Department of Architecture, National University of Singapore
18. Woon Chung Yen, 2005, Master of Architecture Dissertation, Department of Architecture, National University of Singapore
19. Austin Chandrasekaran, 2005, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
20. Hannah B M Gonzalez, 2005, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
21. Wenjing Li, 2004, Master of Science in Architecture Thesis: GIS-based Evaluation of Climatic Performance on Three-Dimensional Urban Geometry. National University of Singapore
22. Anandan Karunakaran, 2004, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
23. Bharathy Govindasamy, 2004, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
24. Habib Raja Mohd Nagoor, 2004, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
25. Chiam Ming Lee, 2003, Master of Architecture Dissertation, Department of Architecture, National University of Singapore
26. Goh Wee Ping, 2003, Master of Architecture Dissertation, Department of Architecture, National University of Singapore
27. Rustam Tan, 2003, Master of Architecture Dissertation, Department of Architecture, National University of Singapore. NUS
28. Sivakumar Kumaresan, 2003, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore
29. Xie Yi, 2003, Master of Art in Urban Design Dissertation, Department of Architecture, National University of Singapore. NUS
30. Odita Bin Ibrahim, 2002, Master of Art in Urban Design Dissertation, Department of

Architecture, National University of Singapore

B3. Undergraduate Students

N/A

B4. Service on Thesis or Dissertation Committees

(Ph.D. Dissertation Committee Member)

1. *Xiaofang Liang (- December 2023), as committee member
Ph.D. Dissertation: Connectivity For Whom And At What Cost: Contesting Network Infrastructure Duality in Urban Planning
Current Position: Assistant Professor, Taubman College of Architecture and Urban Planning, University of Michigan (from January 2024)
2. *Nirvik Seha (August 2018 – July 2020), as minor supervisor
Ph.D. Dissertation: The Space Allocation Problem
School of Architecture, Georgia Institute of Technology
Current Position: Research scientist, School of Architecture at Rensselaer.
3. *Soowon Chang, Ph.D. (August 2016 – June 2020), as minor supervisor
Ph.D. Dissertation: Investigation of Transforming Urban Buildings at Multiple Scales
School of Building Construction, Georgia Institute of Technology
Current Position: Assistant Professor at School of Construction Management Technology, Purdue University (from July 2020)
4. *Alya Hashim, Ph.D. (August 2016 – June 2020)
Ph.D. Dissertation: Rational Decision Making in Early Urban Design Based on Uncertain Performance Predictions.
School of Architecture, Georgia Institute of Technology.
Current Position: NA
5. *Fei Zhao, Ph.D. (June 2011)
Ph.D. Dissertation: *Agent-based Modeling of Commercial Building Stocks for Energy Policy and Demand Response Analysis.*
School of Architecture, Georgia Institute of Technology
6. *Deborah Middleton, Ph.D. (June 2009)
Ph.D. Dissertation: *Growth and Expansion in Post-War Urban Design Strategies: C.A. Doxiadis and the First Strategic Plan for Riyadh, Saudi Arabia (1968-1972),*
School of Architecture, Georgia Institute of Technology.
7. Jingnan Huang, Ph.D. Department of Geography, National University of Singapore, 2008
8. Liu Xuan, Department of Real Estate, National University of Singapore, 2006
9. Yeo Kang Shua, Ph.D. Department of Architecture, National University of Singapore, 2006
10. Cam Chi Ngyuen, Ph.D. Department of Architecture, National University of Singapore, 2005
11. Ji Zhang, Ph.D. Department of Architecture, National University of Singapore, 2003

B5. Mentorship of Postdoctoral Fellows or Visiting Scholars

(Individual Graduate Research/ Individual Credited Research)

1. Suzhi Wang, Master of Industrial Design student (Spring 2017)
Research topic: Interactive design and Internet of Things for Tokyo smart city
2. Florina Dutt, Ph.D. student (Fall, 2016)
Research topic: Cities perceived as Human sensing Interactive Built Environment:
Exploring the use of IOT and ICT in developing co-design strategies for Smart Cities
3. Jiawen Wang and Yigong Zhang, MSUD students (Spring 2014)
(To co-supervise with Professor Alan Balfour)
Research topic: Future Shanghai: A review of waterfront design and development of
Shanghai since 1979
4. Huafei Xing, MSUD students (Spring 2013)
Research topic: How Watershed Basin Hierarchy Influences LID Strategies: Comparison
between Two Urban LID Cases in Atlanta
5. Joseph Goodman, Ph.D. student, (Fall 2011)
Research topic: A University to Community Net-Zero Energy Urban Agriculture System.
6. Jong Il Park, Ph.D. (former Ph.D. student), (Fall 2010)
Research topic: Algae powered house: planning parameters for urban, suburban and
rural settings

C. Educational Innovations and Other Contributions

(Recognitions in Teaching)

In Spring 2021, Yang was a faculty supervisor (with Ellen Dunham-Jones) to co-supervise a Georgia Tech student team for 2021 ULI Hines Student Competition that was selected as one of the four finalists out of 105 submissions from schools of architecture and planning of the nation.

In December 2021, Tokyo smart city studio project was featured by ESRI, a leader in GIS industry: *“At Georgia Tech, an interdisciplinary program teaches students principles of urban design and gives them tools to apply smart city solutions for Tokyo’s future growth.”*

<https://www.esri.com/about/newsroom/blog/georgia-tech-students-smart-city-tokyo/>

In December 2021, ten students from CP8873/ARCH8803/AE8803 *Smart City Workshop* in Fall 2021 were invited to present their final research project of the semester in the session of “Future Airport City Systems Design” in *Podcar City Conference*, by the organizer Atlanta Airport Community Improvement Districts (AACIDs), December 9-10, 2021, Atlanta.

In 2011, 2020, 2022, Yang was awarded “Thank a Teacher” certificates from The Center for the Enhancement of Teaching and Learning of Georgia Institute of Technology, in recognition of “excellence in teaching” and “dedication to helping students learn in design studio”.

(New Courses Developed)

Having a joint appointment in both School of City and Regional Planning and School of Architecture, Yang developed courses to bridge the two Schools to focus on urban design. All courses developed and taught are cross-listed in both Schools. Four courses were developed from 2009:

1. Capstone International Smart City Workshop – CP6962, MSUA and MS programs (2023 to Present), Faculty led Study Abroad Program approved by Office of International Education (OIE), Georgia Institute of Technology

The International Smart City Workshop is a Summer capstone studio that aims to explore methods of urban design and modeling for urban problems in the face of climate change, urban transition and impacts of technologies to future cities development. Many Asian cities with high-density urban living are facing these challenges and are experimenting new models of smart city development to reduce urban carbon emission to net zero before 2050. The workshop will:

1. explore future cities development to meet U.N. Sustainable Development Goals (SDG);
2. offer experimental learning opportunities for students through building interdisciplinary teamwork;
3. create high-impact research for designing future smart urban systems for carbon neutrality.

Urban systems design offers an approach to designing new forms of sustainable, resilient and socially responsible communities, in which creative urban design integrates data analytics, system thinking and digital technologies (Yang and Yamagata, 2020). The 2023 International Smart City Workshop explore new model of designing sustainable urban communities in the context of high-density urban environment. Urban design is becoming data-driven in the context of data science, pervasive computing, internet of things (IoT) and urban automation.

2. International Urban Design Studio (2009 – Present): CP6053/ARCH6072, Faculty led Study Abroad Program approved by Office of International Education (OIE), Georgia Institute of Technology

The International Urban Design Studio is an on-going initiative in the College of Design and a faculty led study abroad program managed by Office of International Education (OIE) of the Georgia Institute of Technology. This program provides an ongoing platform for faculty and students in the College of Design and collaborating schools and institutions abroad, to develop common intellectual interests and explore collaborative teaching, learning and research opportunities, especially in the area of ecological urban design. The primary objective of the International Urban Design Studio is to engage graduate students in interdisciplinary and collaborative ways for real-world experiences in support of global professional practices in urban design, city planning and architecture. In addition, the intention is to focus the studios on problems that lead to future research and practices.

The studio brings together students from both the School of City and Regional Planning and the School of Architecture who specialize in urban design. The studios are part of the professional curricula in the Master of City and Regional Planning, the Master of

Architecture and/or the Master of Science in Urban Design. The International Urban Design Studio began in 2009 and occurs intermittently as opportunities arise from international urban settings. Each studio is designed for its specific context, the project situation and the host institutional objectives.

- December 2009 and Spring 2010, *Shanghai Pudong Waterfront Revitalization* (with Dagenhart), joint studio with Tongji University, Shanghai.
 - Spring 2011, *Ecological Urbanism Studio: global benchmarking for low carbon urban design*, a project selected and exhibited at *the 100th ACSA (Association of Collegiate Schools of Architecture) Annual Meeting*, March 2012, MIT and Boston.
 - Spring 2012, *Agrarian Urbanism Studio: A low energy agriculture system in Wheat Street Garden at Atlanta*, with Georgia Tech's School of Biology, Arkfab group and Truly Living Well.
 - Spring 2013, *Waterfront Revitalization Studio: Asian New Bay Area* in Kaohsiung Taiwan.
 - Spring 2014, *Waterfront Revitalization Studio: Shuidong Bay* in Maoming, Guangdong China.
 - Spring 2015, Shanghai Chongming Eco Island Studio: Design for Urban Metabolism, a joint studio with College of Architecture and Urban Planning and School of Construction Management of Tongji University.
 - Spring 2016, near Zero Energy District Studio, Disney in Pudong, Shanghai. The studio project was in collaboration with Disney Research China, a laboratory of Walt Disney Imagineering.
 - Spring 2017-2024, Tokyo smart city project investigated Urawa-Misono (2017), Kyojima-Sumida (2018-2019), Shinagawa (2020-2021), Nohonbashi (2022-2023) and the Tokyo Bay (from 2024). It's in collaboration with the University of Tokyo and Keio University.
3. Urban Ecological Design (2010 – Present): CP6836-C/ARCH6447-PY/ARCH4803-PY
Design of Smart Urban Systems: CP6552 (from Spring 2022), crossed with ARCH6447-4447

Direct design of cities is often regarded as impossible owing to the fluidity, complexity, and uncertainty entailed in urban systems. And yet, we do design our cities, however imperfectly. Cities are created objects, intended landscapes, that are manageable, experienced and susceptible to analysis (Lynch, 1984). Urban design as a discipline has been focusing on “design” in its professional practices. Urban form and sensuous quality contain human values and decisions (Lynch, 1981). It is analytically distinct from “science” related research that tends to ask positive questions such as how cities function. The course introduces how urban design integrates urban ecology, systems science, data analytics and emerging technologies for shaping urban environments. Cities can be regarded as an urban metabolism or complex systems, in which the metabolic processes, or flows and fluxes of energy, matter, water, organisms, transportation and human movement as well as social and economic activities, determine the physical forms and spatial configurations of cities (Baccini and Brunner, 2012). Once we connect properties of urban form and their ecological processes, we would better know how a city should be designed to contain flows in sustainable and resilient ways. New technologies have also changed the way we understand cities. Technologies enable urban designers and planners to digitally think of the non-digital aspects of cities by using computer simulation and modeling (Batty, 1997). Empowered by new tools and technologies, cities are now far more designable than ever before. Urban design is becoming data-driven. An ability to handle massive data captured in cities or arising from people, devices, buildings and infrastructures, is critical to address problems occurring in places, streets, neighborhoods and cities in the era of internet of things (IoT). Students

will learn principles of cities as ecologically sustainable systems, and how design as a transformative approach makes our cities greener, resilient, energy efficient and more adaptable to unpredictable future changes. The course is structured by five topics as the follows:

- Urban design and urban form
- Urban density and systems complexity
- Urban landscape ecology
- Urban energy and metabolism
- Urban systems design and smart cities

4. Smart City Workshop: Airport City Systems Design (2020-2022): CP8873 C/ARCH8803 PY/ARCH4803/AE8803-SCW (Cross-listed with School of Aerospace Engineering)

Airport cities are emerging as a global city landscape. Many global cities are turning their “city airport” to “airport city”, in which city centers are built around globally significant airports (Kasarda, 2013). Hartsfield-Jackson Atlanta International Airport as the largest hub of the U.S. and as an “urban center” has a daily average of 300,000 people flowing in/out. Aerotropolis is an alignment of the metropolitan region to better leverage an airport’s assets and provide a framework for the strategic planning and development of economic activity and real estate (Atlanta Regional Commission and Aerotropolis Atlanta Alliance, 2016). The airport city hub is a transportation interchange, a complex urban system that contains flows of people, goods, energy, water and information. Moreover, airports and airline operations have been significantly affected due to Covid-19. How will the airport city system be redesigned to become safer, cleaner, nimbler and more resilient to mitigate the impact, while being able to adapt to future disruptions?

The Smart City Workshop Course aims to formulate a smart city hub concept around Hartsfield-Jackson Atlanta International Airport and surroundings, effectively seen as a living laboratory for research. It envisions the post Covid-19 airport city to be a healthy, safe, green, accessible, connected, resilient and socially inclusive urban environment. The workshop applies a method of smart city systems design including three enablers: 1) urban design and planning, 2) urban data analytics, focusing on smart mobility and energy 3) digital twin prototyping. It is an approach to designing smart urban systems from its urban design and planning, data analytics and modeling to systems design. The project will develop common goals of performance criteria, including but not limited to the following:

1. Post Covid-19 airport city environment to be safer, resilient and socially inclusive.
2. Airport City hub planning and design
3. Smart mobility technologies and integration
4. Near-zero energy and carbon neutrality

5. Site Planning and Urban Simulation (2012 to the Present): CP8823 PY/ARCH8823 PY

Site planning has been seen as one of fundamental professional skills for city planners, urban designers and architects. There is an intellectual legacy from the works of Kevin Lynch, Donald Appleyard, Carl Steinitz and Gary Hack who defined site planning as “an art of arranging structure on the land and shaping the spaces between” (Lynch and Hack, 1983), a system approach to planning urban and natural settings over a defined spatial and temporal

environment in context. The course introduces literature in site planning and the foundation of skill development through a series of workshops. It provides visual-based analytical techniques and simulation tools. The course also aims to extend the knowledge of site planning to new challenges of post-oil city by integrating emerging technologies and performance-based design tools for mapping flows in cities including energy, carbon, material, water, human movement and informational flows across spatial territories over time. The representation, analysis and design of sites and urban systems are to be driven by questions behind the shaping of high performance, renewable and resilient urban environment, focusing on urban ecology, renewable energy, carbon offset strategies and the making of sustainable site and urban systems.

VI. Service

A. Professional Contributions

(Editorial Services)

1. Guest editor, *Environment and Planning B: Urban Analytics and City Science*, the theme issue: Urban Systems Design: From Science for Design to Design in Science, 2019.

(Conference, Workshop Chair and Organizer)

1. Session chair of Urbanism, the 111th Annual Meeting of Association of Collegiate Schools of Architecture (ACSA), March 31-April 1, 2023, St Louis.
2. Session chair, Urban Systems Design A – Smart Cities Planning Support, *the 13th Symposium of the International Urban Planning and Environment Association (UPE8): 29 July - 01 August, 2022, Tartu, Estonia (hybrid)*.
3. Session chair, Energy Management, Policy and Economics, *2021 International Conference on Applied Energy (ICAE)*, November 29 - December 5, 2021, in Bangkok, Thailand (virtual).
4. Session chair, Urban Energy Systems, *2019 International Conference on Applied Energy (ICAE)*, August 12-15, 2019, in Västerås, Sweden.
5. Session chair, Urban Energy Systems, *2018 International Conference on Applied Energy (ICAE)*, August 22-25, 2018, Hong Kong
6. Session chair, Urban Energy Systems, *2017 International Conference on Applied Energy (ICAE)*, August 21-24, 2017, Cardiff
7. Session chair and panel organizer, Energy resilient urban systems, *2016 International Conference on Applied Energy (ICAE)*, October 9-11, 2016, Beijing
8. Program track chair, Low-carbon Cities and Urban Energy systems, *Applied Energy Symposium and Summit 2015 (CUE2015)*, Nov 15-17, 2015, Fuzhou, China
9. Session chair and panel organizer, Urban Energy Systems Design, *2015 International Conference on Applied Energy (ICAE)*, March 28-31, 2015, Abu Dhabi
10. Co-Chair of the Conclusion Session (With Dr. Yamagata), *Global Carbon Project (GCP) Workshop on Tools and Indicators for Assessing Urban Resilience*, the University of Tokyo,

