




# Florina Dutt

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 <https://fdutt3.github.io/>

Florina Dutt is a Ph.D. candidate in the School of City and Regional Planning at Georgia Institute of Technology, USA. Her research interests include assessing the influence of the built environment on people's mental well-being, incorporating ideas of mental health in designing smart cities, and sustainable development. Her work with the Center for Spatial Planning Analytics and Visualisation (CSPAV) at Georgia Tech involves use of applied machine learning techniques in processing large-scale social media data and application of GIS automation techniques for analysing fine grain built environment data. Apart from research, she has over 5 years professional experience in the field of urban planning, urban design, and architecture and also co-founded a design initiative called Caddisflai.

## Academic Degrees

2016-Present	<b>Georgia Institute of Technology, Atlanta, USA</b> <b>Ph.D. in City and Regional Planning (GPA 3.87)</b> <b>Major:</b> Application of Urban Informatics in Urban Design   <b>Minor :</b> Social Computing <b>Dissertation Topic:</b> Assessing Mental Well-being in Urban Areas Using Social Media Data: Understanding When and Where citizen's Stress and De-stress.
2014-2016	<b>Master of City and Regional Planning (GPA 3.75)</b> <b>Specialization:</b> Sustainable Development, Urban Design, and Land Use
2009-2010	<b>University of Pennsylvania, Philadelphia, USA</b> <b>Master of Architecture (GPA 3.76)</b> <b>Specialization:</b> Sustainable Design, and Design Computing. Thesis Topic: Computational design of a bio-inspired responsive architectural Façade system.
2003-2008	<b>Jadavpur University, Kolkata, India</b> <b>Bachelor of Architecture (GPA 3.68)</b> Thesis Topic: Designing Eco-Adaptable Residence in a Hot & Humid Climate in Kolkata, India.

## Academic Appointments

2017- Present	<b>Georgia Institute of Technology, Atlanta, USA</b> <b>Center for Spatial Planning and Visualization (CSPAV)</b> <b>Graduate Research Assistant</b> <b>Ph.D. Research:</b> Identifying people's stress levels using large scale social media data (Tweets), and finding the association between stress and built environment characteristics such as streetscape, street-safety, density, diversity, and destination accessibility. Exploring natural language processing, and applied machine learning techniques for building stress, sentiment, and affect classifier.  <b>Other Research:</b> Assessing traveler's attitude and stress level using social media data. Exploring framework for transit oriented development (TOD) in Atlanta. Exploring design possibilities for active transportation/non-motorized transportation.
2016-2017	<b>Eco-Urban Lab</b> <b>Graduate Research Assistant</b> <b>Research:</b> Urban energy modeling, integrating geographic information system (GIS), and building energy modeling (BIM). Exploration of alternative energy use in neighborhoods.
2014- 2016	<b>Imagine Lab</b> <b>Graduate Research Assistant</b> <b>Research:</b> Developing framework for evaluating user-experience in university campuses.
2008- 2010	<b>Carnegie Mellon University, Pittsburgh, USA</b> <b>Center for Building Performance and Diagnostics</b> <b>Graduate Researcher</b> <b>Research:</b> Exploring application of building energy modeling (BEM), performance analysis of intelligent workplace systems, technology research on net-zero buildings.

## Research Grant Experience

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### NSF Grant Projects

- 2016- 2017      **Engineering Research Center for Urban Agricultural Infrastructure Systems**  
**Role:** Conducted research on algae powered neighborhood, multiple publications, and conference presentation.
- 2014- 2015      **RIPS - Participatory Modeling of Complex Urban Infrastructure Systems**  
**Role:** Conducting research on framework of transit oriented development (TOD) in Atlanta , data cleaning, data analysis, and visualizations.

## Research Project Experience [\(refer publications\)](#)

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### Classification and Topic analysis of Text Data

- 2017 -2018      **Assessment of travelers' attitudes and coping strategies during emergency events**  
Developed a system to capture historic Tweets and label them based on Traffic related topics and attitude. A semi- supervised labelling process is used to filter relevant Tweets and assign different topic categories (1) by hyper-parameter tuning, and (2) by feature engineering. Different Machine Learning models were compared before choosing the best performing models. Presented in ACSP conference 2018.
- 2018 -2019      **Assessment of people's day-to activities using Tweets**  
Developed a system to capture Tweets real-time using Twitter 4J (A java based library to download Tweets using API). Semi- supervised labelling process is used to filter relevant Tweets and assign different topic categories by activities. Presented in ACSP conference 2019.
- 2019 -Present      **Measuring Mental Wellbeing (Stress, Affect, and Sentiment Analysis)**  
**Assessment of stress and affective quality of the Tweets (Dissertation)**  
Developed a system to assess the stress level and affective quality of the tweets. Tweets were initially hand labelled into different stress and affective quality labels. Next we used Feature engineered Tweets (weighting techniques based on affective words used in the Tweets) to build deep learning model to classify and score tweets for their stress level. Presented in ACSP conference 2020.
- 2019 - 2020      **Interactive Modeling**  
**Interactive modeling and comparison of sentiments (INMACS)**  
Collaboratively developed an interactive Auto-ML system that helps users to iteratively pre-process data (using natural language processing) to build topic and sentiment models. DaSH Workshop at KDD Conference 2020.
- 2020 - present      **Built Environment Assessment (Processing Large Scale GIS Data)**  
**Relationship Between Urbanness and mental wellbeing( Dissertation)**  
Developed python codes for processing large scale, fine grain, built environment data to measure accessibility and streetscape. Streetscape measurements include but not limited to building enclosure, effective street-width, tree enclosure , dead-ends etc. Other than physical entities, social-economic, crime, and environmental stress variables are also measured and estimated for large volume of Tweet locations. Proposed to be presented at ACSP 2021.
- 2016 - 2018      **Gauging neighborhood potential for alternative energy generation techniques**  
Developed python based GIS data cleaning and data processing to estimate the energy generation potential for different neighborhoods characterized their scale and built-environment quality. Published in Energy Procedia.
- 2017- 2018      **Spatial implications of an urban redevelopment at Ponce City Market (PCM)**  
Studied the movement of pedestrians and visitors within and around Ponce City Market , and conducted topological and observational analyses to determine the internal spatial logic of the PCM and how it works as a system internally, and impact on surrounding blocks and functions. Project done in conjunction with Georgia Tech, and Jamestown Properties.
- 2009 - 2017      **BIM and Design Computation**  
Extensive personal and collaborative experience developing BIM models for buildings, and in developing computational framework for energy efficient design systems both building and urban scale. Published in leading Computer Aided Architectural Design (CAAD) Conferences and Journals.

## Teaching Experience

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Fall, 2020	<b>Instructor</b> <b>Visualization for Planning</b> Data Visualization and Presentation Techniques for Master of Urban Planning and Master of Science for Geographic Information Systems and Design.
Spring, 2019	<b>Teaching Assistant (TA)</b> <b>Joint Urban Planning Studio (Georgia Institute of Technology + Indian Institute of Technology, Varanasi &amp; Kharagpur, India)</b> The studio investigated three specific areas of Varanasi to come up with sustainable and implementable solution that fits the goal of Varanasi Smart City Master Plan.
Spring, 2017	<b>Joint Urban Planning Studio (Georgia Institute of Technology + University of Tokyo)</b> The Studio investigated one of 2020 Summer Olympic Game sites, Urawa Misono, a satellite town of Tokyo's metropolitan region. The teams explored the role of smart city technologies, ecological performance modeling, and sustainability.
Fall, 2016	<b>Urban Ecological Design</b> Teaching tools and techniques for site analysis and estimating energy performance of buildings.
Spring, 2016	<b>Studio Co-ordinator</b> <b>Joint Urban Planning Studio (Georgia Institute of Technology+ Tongji University + Disney, Shanghai)</b> The studio team assisted Disney, Shanghai with the creation of evaluative tools and guidelines for designing a near net zero energy community south of the Disneyland theme park in Shanghai, China.
Summer, 2019	<b>Invited Talks</b> <b>Georgia Institute of Technology , School of City and Regional Planning</b> <b>GIS Capstone Project Seminar</b> Use of Social Media Analytics in Urban Planning.
Spring, 2020	<b>Shandong University, Qingdao, China</b> <b>School of Computer Science, Guest Speaker Series</b> Assessment and mapping of stress levels in urban areas using Twitter data.

## Industry Experience

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2017- Present	<b>Caddisflai:</b> generative design studio <b>Co-founder</b> <b>Role:</b> Primarily focus on design decisions taken through research in generative design, and artificial intelligence to solve day-to-day problems in the built environment, urban spaces, products, and interactive visual systems.
Summer, 2015	<b>Smallwood, Reynolds, Stewart, Stewart, Atlanta, USA</b> <b>Urban Designer (summer Intern)</b> Preparing master plan for residence halls for college in Florida, and mixed use developments such as retail and commercial in Sandy Springs, Georgia. <b>Role:</b> Developing conceptual design, detail design, and visualizations.
2011 -2014	<b>Vast Design United Enterprise, Shanghai, China</b> <b>Urban Planning - Project Manager</b> Prepare master plan for large scale landscape, mixed used, housing and infrastructure planning projects . Projects involved architectural design and historic preservation. <b>Role:</b> Developing conceptual design to plan implementation. Leading team work, review design and drawings. Collaboration with city in preparing stage-wise urban plan and design.
2010 -2011	<b>IAPA, Guangzhou, China</b> <b>Urban Designer</b> Preparing master plan of large scale landscape, and urban design projects of culture parks and eco-parks in China. <b>Role:</b> Developing conceptual design for master plan, detail design, and visualizations.

# Publications

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## Work in Progress (presented in conference)

Assessment of Citizen's Affect from Tweets in Different Urban Setting: Comparing Atlanta and Boston. **Florina Dutt**, Subhrajit Guhathakurta, 2020.

Assessment of travelers' attitudes and coping strategies during Atlanta's I-85 bridge collapse using Twitter. **Florina Dutt**, Subhrajit Das, and Subhrajit Guhathakurta, 2020.

Reclaiming the Public Realm to Improve Human Health and the Environment in Indian Cities: The case for incorporating non-motorized modes of travel in the design of streets and public spaces, **Florina Dutt**, and Subhrajit Guhathakurta 2020.

## Journal Publications

Framework for evaluating and optimizing algae façades using closed-loop simulation analysis integrated with BIM, Soowon Chang, Daniel Castro-Lacouture, Florina Dutt, and Perry Pei-Ju Yang, *Energy Procedia*, 143, 237-244, 2017.

Decentralized algal energy system design at various urban densities and scales, Steven Jige Quan, Thomas K Igou, Soowon Chang, **Florina Dutt**, Daniel Castro-Lacouture, Yongsheng Chen, and Perry Pei-Ju Yang, *Energy Procedia*, 143, 767-773, 2017.

Modeling algae powered neighborhood through GIS and BIM integration, **Florina Dutt**, Steven Jige Quan, Erik Woodworth, Deniel Castro-Lacouture, Ben J. Stuart, Yang, and Perry Pei Ju, Yang, *Energy Procedia*, 105, 3830- 3836, 2017.

Local Climate Zone Mapping for Energy Resilience: A Fine-grained and 3D Approach, Steven Jige Quan, **Florina Dutt**, Yoshiki Yamagata, and Perry Pei Ju, Yang, *Energy Procedia*, 105, 3777-3783, 2017.

Computational design of a bio inspired responsive architectural Façade system, **Florina Dutt**, and Subhrajit Das, *International Journal of Architectural Computing*, 10(4), 613-633, 2012.

## Peer Reviewed Conference Publications

Geospatial tool Evaluating job location mismatch, based on available workforce and transit options, **Florina Dutt**, and Subhrajit Das, *8th ASCAAD Conference Proceedings*, London (United Kingdom), 557-566, 2016.

Design Optimization in a Hotel and Office Tower Through Intuitive Design Procedures and Advanced Computational Design Methodologies Facade design optimization by computational methods, Subhrajit Das, and **Florina Dutt**, *30th International Conference Ecaade*, Prague (Czech Republic) 1, 235-243, 2012.

Responsive Architectural Surface Design from Nonlinear Systems Biology: Responsive Architectural Design by Computational Methods, **Florina Dutt**, and Subhrajit Das, *17th International Conference on CAADRIA, Chennai (India)*, 465-474, 2012.

Designing Eco Adaptable Residence in a Hot & Humid, **Florina Dutt**, and Subhrajit Das, *16th Iberoamerican Congress of Digital Graphics(SIGRADI)*, Fortaleza (Brasil), 509-512, 2012.

## Workshop Publications

InMacs: Interactive modeling and comparison of sentiments from sequence data, Subhrajit Das, and **Florina Dutt**, *Workshop on Data Science with Human in the Loop (DaSH), at KDD conference*, 2020.

Interactive Glare Visualization Model for an Architectural Space, **Florina Dutt**, Subhrajit Das, and Mathew Swarts, *4th International Regional eCAADe Workshop*, Novi Sad (Serbia), 97-107, 2016.

Eco-Urban Planning & Design for a futuristic vision of Shanghai, **Florina Dutt**, and Subhrajit Das, *Master planning the Future*, Xi'an Jiaotong-Liverpool University, Suzhou (China) 239- 248, 2012

## Poster Publications

Does choice of day-to-day activity location impact Mental Well-being? Mapping people's activities and associated stress levels from Tweets, **Florina Dutt**, and Subhrajit Guhathakurta, Poster presentation, *Association of Collegiate School of Planning (ACSP) Annual Conference*, Nov 2020 (*Awarded Best Poster*)

Citizen's Affect assessment in different urban settings, **Florina Dutt**, and Subhrajit Guhathakurta, *Career, Research, and Innovation Development Conference (CRIDC)*, Georgia Tech, 2019.

Design ornamentation & fabrication by multi agent systems, **Florina Dutt**, and Subhrajit Das, *Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)*, 2012.

## Invited Conference Presentations

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Unveiling Urban Stress using Tweets: Modelling the Impact of Built Environment Stressors on Mental Well-being, **Florina Dutt** (presenter), and Subhrajit Guhathakurta, *Association of Collegiate School of Planning (ACSP) Annual Conference*, Nov, 2020, online attendance.

InMacs: Interactive modeling and comparison of sentiments from sequence data. **Florina Dutt** and Subhajit Das (presenter), *Workshop on Data Science with Human in the Loop (DaSH), at KDD conference*, Aug 2020, online attendance.

Assessment of Citizen's Affect from Tweets in Different Urban Setting: Comparing Atlanta and Boston, **Florina Dutt** (presenter), and Subhrajit Guhathakurta, *Association of Collegiate School of Planning (ACSP) Annual Conference*, Oct, 2019, Greenville, North Carolina.

Assessment of Citizen's 'Affect' from Tweets in Different Urban Setting: Comparing Atlanta and Boston, **Florina Dutt** (presenter), and Subhrajit Guhathakurta, *Georgia Planning Association (GPA) FALL Conference*, Sept 2019, Athens, Georgia.

Assessment of travelers' attitudes and coping strategies during Atlanta's I-85 bridge collapse using Twitter, **Florina Dutt** (presenter), and Subhrajit Guhathakurta, *Association of Collegiate School of Planning (ACSP) Annual Conference*, Oct, 2018, Buffalo, New York.

Assessment of travelers' attitudes and coping strategies during Atlanta's I-85 bridge collapse using Twitter, **Florina Dutt** (presenter), and Subhrajit Guhathakurta, *Georgia Planning Association (GPA) FALL Conference*, Sept 2018, Jekyll Island, Georgia.

Modeling algae powered neighborhood through GIS and BIM integration, **Florina Dutt** (presenter), Steven Jige Quan, Erik Woodworth, Daniel Castro-Lacouture, Ben J Stuart, Perry Pei-Ju Yang, *Southeast Recycling Conference (SERC)*, March 2017, Destin, Florida.

Reclaiming the Public Realm to Improve Human Health and the Environment: Urban form and non-motorized transportation in Indian cities, Subhrajit Guhathakurta (presenter) and **Florina Dutt**, *International Seminar on Planning for Sustainable and Inclusive Urban Development in India: Learning from International Experiences and Future Strategies*, Aug 2015, New Delhi (India).

## Award & Honors

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**Center for Research Teaching & Learning (CITRL) Associate** | 2021

**3rd Prize in A8' Design Competition** for post-pandemic urban seating | 2021

**Reflective Teaching Badge**, Center for Teaching and Learning, Georgia Tech | 2020

**Best Poster**, Association of Collegiate School of Planning (ACSP) | 2020

**Finalist**, Urban Land Institute (ULI) Student Competition | 2016

**Travel Award** for Joint Urban Planning Studio, Disney Shanghai | 2016

**Glatin Jackson Kecher Anglin Fellowship** | 2015

Best Annual Urban Planning Project Award, Vast Design United Enterprise | 2012

Registered Architect in Council of Architecture India | 2008

Finalist, Water Safe and Sustainable Design Competition | 2008

Pedilite Award of Excellence for Young Designer | 2008

1st runner up, Indian Green Building Design Competition | 2007

2nd runner up, Indian Green Building Design Competition | 2006

1st Prize, Saint Gobain Glass Design Competition | 2006

## Skills

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### Statistical Analysis

SPSS, R, Python (numpy, pandas, scikit learn), Tableau, Excel

### Programming Skills

R, Python

### Spatial Analysis

ArcGIS, QGIS, Depth Map, Arcpy and other open source python libraries for GIS automation and spatia data processing

### Text Mining

Text preprocessing, NLP Analysis, Deep Learning

### 2D Graphics

Adobe- InDesign, Photoshop, Illustrator

### 3D Modeling & BIM

Auto Cad, Revit, 3DS Max, Rhino, Maya, Sketchup

### Parametric Modeling Tools

Grasshopper, Dynamo

### Energy Simulation Tools

Green Building Studio, Ecotect, Equest, Energy Plus

### Analytics Courses

Advanced GIS

Quantitative Research Methods

Qualitative Research Methods

Design Scripting

Urban Spatial Analytics (Space Syntax)

Database management and Machine Learning

Social Computing

Survey Design Methods

### Teaching and Learning Courses

Awaiting Tech to Teaching Certificate Award Summer 2021

Graduate Student Instructor (GSI) Seminar

Fundamentals of Teaching and Learning

Course Designing

Teaching Capstone