John Y. Shi

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Summary

I am an engineer with a strong background in mathematics and coding, having authored over 20 papers that challenge conventional wisdom in my field. From teaching more than ten courses, I excel at synthesizing complex ideas into actionable insights for individuals of all backgrounds. My Ph.D. has honed my ability to collaborate, solve complex (maybe ambiguous) problems, learn new concepts quickly, and think creatively—both independently and within a team.
I'm excited to leverage my expertise to tackle new challenges and make a significant impact in my next role.

Education

Carnegie Mellon University — Pittsburgh, PA
Ph.D. in Electrical and Computer Engineering — *Sept 2017 - May 2023*
- **Thesis Title:** A Dual Domain Approach to Graph Signal Processing
- **Awards:** A.G. Jordan Award (Awarded to a **single** CMU graduating Ph.D. for Outstanding Thesis),
  ICASSP Signal Processing Rising Star (**1 out of 24** graduating Ph.D.s around the world).

University of Maryland - College Park — College Park, MD
B.S. in Computer Engineering and Applied Mathematics — *Sept. 2013 - May 2017*
- **GPA:** 3.745/4.0

Experience

Postdoctoral Researcher — Sept 2022 – Present
Carnegie Mellon University — *Pittsburgh, PA*
- Pioneered the Companion Model, a groundbreaking framework that challenges common Signal Processing norms.
- Led GSP workshops and courses at international conferences and Carnegie Mellon.
- Mentored **7** undergraduate students on research projects, leading to **5** conference papers and **1** journal paper.
- Collaborated with Software Engineering Institute (SEI) researchers to obtain a grant for graph data research.

Spatial Computing Researcher, Contractor — Dec. 2024 – Present
Schemata AI — *San Francisco, CA*
- Created a ML Pipeline to automatically process scene information, reducing manual input to the LLM.
- Worked with clients to better understand their business needs and incorporate them into the Pipeline.

Software Engineering Intern — May 2017 – Aug 2017
Google — *Mountain View, CA*
- Designed and developed frontend and backend software for Google My Business – Bulk Insights, using Java and JavaScript to migrate the platform to a new framework and improve the user interface.

Projects

Machine Learning on Graphs | *Python, Pytorch, MATLAB, R, Scikit-Learn* — 2021 – Present
- Classified graph data, achieving 3-5% higher accuracy than deep learning methods by using decision trees.
- Showed the equivalence between popular graph deep learning architectures and traditional CNNs, achieving comparable accuracy across both models using Pytorch.

Topology Adaptive Graph Convolutional Networks (TAGCN) | *Python, Pytorch, Java* — 2018 – 2020
- Created Topology Adaptive Graph Convolutional Networks (TAGCN), which improve model accuracy by 2-3% accuracy over existing deep learning approaches on several graph datasets.
- Used Graph Signal Processing to pre-process data, increasing TAGCN accuracy by 30% on challenging datasets.
- Developed custom graphing software in Java to display TAGCN accuracy and error bars in the exact format we wanted for the Signal Processing Magazine paper.

Disaster Relief Life Vest | *Python, Arduino, OpenCV* — Spring 2018
- Engineered solutions for real-world challenges such as natural disaster recovery in other countries.
- Designed a life-vest prototype, a scale model of a flooded town, and a real-time tracking dashboard for a business pitch, all in less than 24 hours, earning third place at the CMU Impactathon.

Technical Skills

Languages: Java, Python, C, SQL, MATLAB, Arduino, Golang, Unix, HTML/CSS, Javascript, Ruby
Developer Tools: Git, Docker, Eclipse, VSCode, Visual Studio, IntelliJ, Microsoft Office
Libraries: Scikit-Learn, NumPy, Matplotlib, Pytorch, OpenCV

Publication List/CV Available on my personal website.