

# Sophie Pavia

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spaviap@gmail.com • 864-915-8385

## Education

### Vanderbilt University

Computer Science.

*Relevant Coursework:* AI For Social Good, Artificial Intelligence, Deep Learning, Machine Learning

*Honors:* Provost Graduate Fellowship

Nashville, TN

GPA: 3.8/4.0

### Florida State University

Bachelor of Science, Computer Science, Minor in Mathematics and Italian Studies

*Honors:* Suma Cum Laude, Honors, Garnet and Gold Key Society Recipient

Tallahassee, FL

April 2022

GPA: 3.9/4.0

## Experience

### Institute for Software Integrated Systems, Vanderbilt University

*Research Assistant*

Nashville, TN

Jun 2022 – Present

- Conducted AI research with a focus on fairness in decision-making using optimization techniques
- Developed an equity and fairness-centered mixed integer linear program for transit network design using mathematical programming
- Oversaw and mentored 3+ undergraduate and high school interns in the lab
- Supported algorithm development and technical capabilities of micro-transit scheduling web application for Chattanooga Area Regional Transit Agency (CARTA)
- Collaborated with Vanderbilt's social science team and Chattanooga's (TN, USA) transit agency on Fairness in Resource Allocation projects, showcasing interdisciplinary teamwork

### BigLab!, Florida State University

*Research Assistant*

Tallahassee, FL

Jan 2021 – April 2022

- Developed DNN models with Word2vec and Elmo embeddings as well as regular ML classification models to gather actionable insights from medical research database, CORD19
- Designed and implemented interactive profiling and visualization tools for Large-scale COVID-19 structured data modeling on covidkg.org, contributing to accessible data exploration
- Led research and development efforts as a team leader under Michael Gubanov, including conducting candidate interviews to build a high-performing team, where I oversaw and mentored 4 graduate member's research

## Publications

- 2024
  - **Sophie Pavia**, D. Rogers, A. Sivagnanam, M. Wilbur, D. Pandithage, Y. Kim, P. Pugliese, S. Samaranayake, A. Laszka, A. Mukhopadhyay, A. Dubey. **SmartTransit.AI: A Dynamic Paratransit and Microtransit Application**, in *International Joint Conference on Artificial Intelligence IJCAI: Demonstration Track*, 2024.
  - **Sophie Pavia**, D. Rogers, A. Sivagnanam, M. Wilbur, D. Pandithage, Y. Kim, P. Pugliese, S. Samaranayake, A. Laszka, A. Mukhopadhyay, A. Dubey. **Deploying Mobility-On-Demand for All by Optimizing Paratransit Services**, in *International Joint Conference on Artificial Intelligence IJCAI: AI and Social Good*, 2024.
  - **Sophie Pavia**, Shadi Omidvar Tehrani, Danushka Edirimanna, Rishav Sen, Michael Wilbur, Chandra Ward, Paul Speer, Philip Pugliese, Ayan Mukhopadhyay, Aron Laszka, Samitha Samaranayake, Abhishek Dubey. **Transit Design: A Holistic Approach Considering Equity and Efficiency**. *Presented at the 104th Annual Meeting of the Transportation Research Board*, Washington, D.C., 2024.
- 2023
  - **Sophie Pavia**, J. Carlos Martinez Mori, Philip Pugliese, Abhishek Dubey, Samitha Samaranayake, Ayan Mukhopadhyay. **Designing Equitable Transit Networks**. *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO)* (Poster), 2023.
  - Michael Wilbur, **Sophie Pavia**, Abhishek Dubey, Pravesh Koirala, Zakariyya Al-Quran, Maxime R. Coursey, Philip Pugliese. **Microtransit Optimizer for Mobility-on-Demand**. *8th IEEE International Conference on Smart Computing (SMARTCOMP)*, **I presented and received Best Demo Award**, 2023.

- **Sophie Pavia**, J. Carlos Martinez Mori, Philip Pugliese, Abhishek Dubey, Samitha Samaranyake, Ayan Mukhopadhyay. Designing Equitable Transit Networks. *INFORMS Transportation and Logistics Society Conference (Extended Abstract)*, 2023.
- Michael Gubanov, Anna Pyayt, **Sophie Pavia**. Learning Circular Tabular Embeddings for Heterogeneous Large-scale Structured Datasets. *26th International Conference on Extending Database Technology, 25th International Workshop on Design, Optimization, Languages and Analytical Processing of Big Data (Workshop Paper)*, 2023.
- 2022
  - **Sophie Pavia**, Rituparna Khan, Anna Pyayt, Michael Gubanov. Simplifying Profiling by Learning Tabular Embeddings at Web Scale. *ACM SIGMOD*, 2022.
  - Michael Gubanov, Anna Pyayt, **Sophie Pavia**. Visualizing and Querying Large-scale Structured Datasets by Learning Multi-layered 3D Meta-Profiles. *2022 IEEE International Conference on Big Data (Big Data)*, 2022.
  - Michael Gubanov, Sophie Pavia, Anna Pyayt, William Goble. Leveraging Scalable Profiling to Learn and Visualize the Latest Trustworthy COVID-19 Medical Research Findings. *31st ACM International Conference on Information & Knowledge Management*, 2022
  - **Sophie Pavia**, Nick Piraino, Kazi Islam, Anna Pyayt, Michael Gubanov. Hybrid Metadata Classification in Large-scale Structured Datasets. *Journal of Data Intelligence, Rinton Press (Special Issue on Best of DEXA)*, 2022
- 2021
  - **Sophie Pavia**, Nick Piraino, Kazi Islam, Anna Pyayt, Michael Gubanov. Hybrid Metadata Classification in Large-scale Structured Datasets. *Invited paper in the journal of Data Intelligence, Rinton Press, Special Issue on “Best of DEXA”*, 2021.
  - **Sophie Pavia**, Montaisr Shams, Rituparna Khan, Anna Pyayt, Michael Gubanov. Learning Tabular Embeddings at Web Scale. *IEEE BigData*, 2021.

### Skills & Interests & Leadership

**Technical:** Python, C++, Julia, C, Java, C#, SQL, SPARQL, Linux

**Frameworks & Tools:** Gurobi, TensorFlow, MongoDB, Docker, PySpark, Anaconda3, AWS, Spark Flask, Jira, Git

**Leadership:** Graduate Women in Science Executive Board Member, Pen Pals for a Purpose Leader

**Awards:** Best Demo SMARTCOMP, SIGMOD Student Travel Award, TSL Travel Award, CPS-IoT NSF Student Travel Award