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Engineering Management and Systems Engineering
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EDUCATION

2026 **George Washington University**, Washington, D.C. Ph.D. Systems Engineering
Dissertation: *Sustainable Transportation, Sustainable Research: Consumer Adoption and Grid Peak-Shaving of Battery Electric Vehicle Smart Charging, Inspiring the surveydown Open-Source Survey Platform*
Doctoral Committee: John Paul Helveston, Caitlin Grady, Johan René van Dorp, & Eric Hittinger
2018 **University of Sydney**, Sydney, NSW, Australia M.P.E. Mechanical Engineering
2015 **Pennsylvania State University**, State College, PA B.S. Industrial Engineering

RESEARCH INTERESTS

- **Data Science:** Studying human behavior in sustainable transportation with mixed logit and related discrete choice models and large-scale scenario simulation, from survey design and fielding through statistical modeling and visualization, using electric vehicle smart charging as the leading case to generate program design and policy suggestions.
- **Open-Source Software:** Development of *surveydown*, a programmable, markdown-based survey platform built on Quarto, Shiny, and PostgreSQL, its companion GUI *sdstudio*, and *TidyViz*, a Python package for tidying and visualizing survey data.
- **Agentic AI Engineering:** Building reproducible research and engineering workflows around Claude Code with plugins, skills, MCPs, and hooks, documented in public tutorials, and taught through a workshop on the GW Trustworthy AI Initiative for researchers and developers.

HONORS & AWARDS

- **2025:** Profiled by GW Engineering for contributing to the *surveydown* platform.
- **2024:** 2nd Prize in GW's 2024 Student Open Source Awards for the *surveydown* R package.

PUBLICATIONS

ORCID: [0009-0001-4877-4844](https://orcid.org/0009-0001-4877-4844) | [Google Scholar Profile](https://scholar.google.com/citations?user=...)

A. Journal Articles

1. **Hu, P.**, Bunea, B., & Helveston, J. P. (2025). "surveydown: An open-source, markdown-based platform for programmable and reproducible surveys" *PLOS ONE*. 20(8). DOI: [10.1371/journal.pone.0331002](https://doi.org/10.1371/journal.pone.0331002)
2. **Hu, P.**, Tarroja, B., Dean, M., Forrest, K., Hittinger, E., Jenn, A., & Helveston, J. P. (2025). "Measuring electric vehicle owners' willingness to participate in smart charging programs". *Environmental Research Letters*. DOI: [10.1088/1748-9326/ae2597](https://doi.org/10.1088/1748-9326/ae2597)

B. Conference Proceedings

1. **Hu, P.**, Tarroja, B., Dean, M., Forrest, K., Hittinger, E., Jenn, A., & Helveston, J. P. (2025). "Measuring consumer willingness to enroll in battery electric vehicle smart charging programs" (Paper No. TRBAM-25-01317). Paper accepted for presentation at the Transportation Research Board 104th Annual Meeting, Washington, D.C.

2. **Hu, P.**, Tarroja, B., Dean, M., Forrest, K., Hittinger, E., Jenn, A., & Helveston, J. P. (2024). "Measuring consumer willingness to enroll in battery electric vehicle smart charging programs" *2024 IEEE Vehicle Power and Propulsion Conference (VPPC)*. 1–17. DOI: [10.1109/VPPC63154.2024.10755299](https://doi.org/10.1109/VPPC63154.2024.10755299)

C. Working Papers & Papers Under Review

1. **Hu, P.**, Bunea, B., & Helveston, J. P. (2025). "sdstudio: A Companion Package for Designing and Managing surveydown Surveys." *Working Paper*.
2. **Hu, P.**, Tarroja, B., Dean, M., Forrest, K., Hittinger, E., Jenn, A., & Helveston, J. P. (2025). "Quantifying the Peak-Shaving Potential and Cost Efficiency of Battery Electric Vehicle Supplier-Managed Charging" *Environmental Research: Infrastructure and Sustainability*. Under Review.

D. Software

1. **Hu, P.** (aut,cre,cph) (2026) "MiniNotes: An Obsidian-compatible macOS menu bar Markdown note app" macOS application.
2. **Hu, P.** (aut,cre,cph) (2025) "TidyViz: A Python package for tidying and visualizing survey data."
3. **Hu, P.** (aut,cre,cph) (2025) "MiniCalendar: A free and open-source mini menu bar calendar" macOS application.
4. **Hu, P.** (aut,cre,cph), Helveston, J. P. (aut,cre), Bogdan Bunea (aut,cre) (2025) "sdstudio: Companion Application for the surveydown Survey Platform" R package.
5. Helveston, J. P. (aut,cre,cph), **Hu, P.** (aut,cre), Bogdan Bunea (aut,cre) (2024) "surveydown: Markdown-Based Surveys Using Quarto Shiny Documents" R package.

TEACHING

A. Teaching Assistantships

- Fall 2025 - EMSE 4572/6572: Exploratory Data Analysis (undergraduate & graduate).
- Spring 2025 - EMSE 4571: Programming for Analytics (undergraduate).
- Mentored students through substantial R programming and data analysis projects.

B. Workshops

- "Agentic Workflows with Claude Code", with John Paul Helveston. GW Trustworthy AI Initiative Summer Workshop 2026. Washington, D.C. Expected Aug 2026. pingfan-hu.github.io/2026-agentic-workshop.
- "surveydown: An Open-Source, Markdown-Based Platform for Reproducible and Programmable Surveys", with John Paul Helveston. Quant UX Con 2025 Workshop Session. Virtual. Nov 06, 2025. jhelvy.github.io/2025-qux-surveydown-workshop.
- "surveydown: An Open-Source, Markdown-Based Platform for Programmable and Reproducible Surveys", with John Paul Helveston. Workshops for Ukraine. Virtual. May 29, 2025. jhelvy.github.io/2025-surveydown-workshop.

PRESENTATIONS

A. Conferences

1. "sdstudio: A Companion Package for Designing and Managing surveydown Surveys". GW Open Source Conference 2026. Washington, DC. Mar 23, 2026.
2. "surveydown: An Open-Source, Markdown-Based Platform for Reproducible and Programmable Surveys". Quant UX Con 2025. Virtual. Nov 05, 2025.
3. "surveydown: An open-source platform for programmable, markdown-based surveys". U.S. Research Software Engineer Conference 2025. Philadelphia, PA. Oct 06, 2025.

4. “surveydown: A Markdown-Based Platform for Interactive and Reproducible Surveys Using Quarto and Shiny”, with John Paul Helveston. Posit Conference 2025 - The R & Python Data Science Conference. Atlanta, GA. Sep 17, 2025.
5. “Grid-Integration of Electric Vehicles: Consumer Preferences for Supplier Managed Charging”. Bridging Transportation Researchers 7. Virtual. Aug 06, 2025.
6. “surveydown: An Open-Source, Markdown-Based Platform for Interactive and Reproducible Surveys”. GW Open Source Conference 2025. Washington, DC. Mar 24, 2025.
7. “Measuring Consumer Willingness to Enroll in Battery Electric Vehicle Smart Charging Programs”, with Brian Tarroja, Matthew Dean, Kate Forrest, Eric Hittinger, Alan Jenn, and John Paul Helveston. 2024 IEEE Vehicle Power and Propulsion Conference (VPPC). Washington, DC. Oct 03, 2024.

B. Posters

1. “Peak-Shaving Potential and Cost Efficiency”. GW 2026 R&D and Senior Design Showcase, The George Washington University. Washington, D.C. Apr 24, 2026.
2. “surveydown: An Open-Source, Markdown-Based Survey Platform”. GW 2025 R&D and Senior Design Showcase, The George Washington University. Washington, D.C. Apr 25, 2025.
3. “Electric Vehicle Owner Preferences for Smart Charging”. GW 2025 R&D and Senior Design Showcase, The George Washington University. Washington, D.C. Apr 25, 2025.
4. “The BEV Smart Charging Adoption Project”. 2025 Transportation Research Board 104th Annual Meeting. Washington, D.C. Jan 06, 2025.

ORGANIZATION MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE)
- Transportation Research Board (TRB)

INDUSTRY EXPERIENCES

- Software Engineer at *Harsco Rail*. Managed and delivered software for Undercutter and Grinder projects, demonstrating expertise in programming and project management skills. SC, USA & Beijing, China (2021 - 2022).
- Project Engineer at *GE Appliances*. Participated in GE’s Edison Engineering Development Program with various appliance projects, showing expertise in PLM management and designs. Qingdao, China (2019 - 2020).
- Assistant Process Engineer (Intern) at *Kurtz Ersä GmbH*. Executed a DoE for new soldering technology, and featured as lead actor in Ersä’s first Asian market promotion video on YouTube. Wertheim, Germany (Jan. - Mar. 2017).

SKILLS

- **Languages:** English (*Proficient*), Chinese (*Native*).
- **Agentic AI Engineering:** Claude Code Workflows, AI Skill Authoring, Harness Design
- **Data Science:** PostgreSQL, tidyverse, ggplot, Survey Design, Discrete Choice Modeling, Logit Modeling
- **Programming:** R, Python, Git, SQL, Shell, JavaScript, App Development
- **Web Development:** Quarto, R Shiny, HTML, CSS, Website Design and Deployment