Muhammad Talal Khalid

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Education

University of Illinois Urbana Champaign *Urbana, USA*
PhD Electrical and Computer Engineering *Jan. 2021 - present*
- Concentration: Power and Energy Systems
- Advisors: Prof. Ann-Perry Witmer and Prof. Kiruba Haran
- CGPA: 3.96/4.00

University of Technology Sydney *Sydney, Australia*
Masters in Engineering & Masters in Engineering Management *Jan. 2017 - Jan. 2019*
- Concentration: Energy Planning and Policy
- Advisors: Prof. Suwin Sandu and Prof. Deepak Sharma
- CGPA: 3.63/4.00

NED University of Engineering and Technology *Karachi, Pakistan*
Bachelors in Engineering *Jan. 2012 - Dec. 2015*
- Concentration: Mechanical Engineering
- Advisor: Prof. Syed Ahmed Raza
- CGPA: 3.47/4.00

Professional Experience

University of Illinois Urbana Champaign *Champaign, USA*
Research Assistant | Part-time *Jan. 2021 - Present*
- Research highlights the importance of understanding community development needs and their social and cultural underpinnings to ensure a high impact and sustainable implementation of renewable energy and electric vehicle technology in local communities.
- Successfully engaged with C-suite utility officials to conceive, negotiate and execute a research-focused formal agreement between the University of Illinois, Electric Power Engineers LLC and Paducah Power Systems to conduct impactful research that integrates technical and contextual insights.
- Supervised and mentored a team of seven undergraduate research assistants to effectively conceptualize research questions, formulate research hypothesis, conduct data analysis and publish research observations.

Electric Power Engineers *Champaign, USA*
Power Systems Engineer | Full-time *May 2024 - Aug. 2024*
- Conducted load flow and voltage flicker analysis studies to evaluate the impact of grid integration of electric vehicles and renewable energy resources.
- Helped the Electrification team to develop and execute community benefits plan and technical data analysis of client contracts worth over $167 million.
- Co-authored, as a part of the proposals team, multiple transportation electrification project proposals and grants that resulted in a direct corporate growth of above $10 million.

Electric Power Engineers *Champaign, USA*
Power Systems Engineer | Part-time *Aug. 2024 - May 2024*
- Prepared and delivered presentation material, conducted stakeholder interviews and organized roundtable discussions with internal and external stakeholders to assess the community-specific needs related to electric vehicles in Paducah, Kentucky.
- Designed scientific, community-oriented, online, survey questionnaires, and used quantitative and qualitative data analysis methods to formulate electric vehicle adoption policy recommendations for electric utility and city officials.
- Produced a clear and comprehensive 77-page Paducah Power System EV Readiness Plan that includes key recommendations to implement electric vehicles in Paducah. To date, this work has resulted in at least $275,000 worth of additional contracts to Electric Power Engineers

Electric Power Engineers *Champaign, USA*

Power Systems Engineering Intern | Full-time *May 2023 - Aug. 2023*

- Prepared a comprehensive 50-page assessment report that identifies and discusses the various technical, social and policy aspects of electric vehicles implementation in small-town America.
- Spearheaded the end-to-end implementation of Customer Relationship Management software for an electric utility company to automate and streamline customer outreach and communications directly benefiting over 3,000 rural and urban utility customers.

Electric Power Engineers *Champaign, USA*

Power Systems Engineering Intern | Full-time *May 2022 - Aug. 2022*

- Developed and implemented Commercial Fleet Vehicle Electrification tool for an Illinois electric utility company to assess the lifetime costs and benefits of a customer's fleet electrification that has assisted at least 15 commercial customers in their decisions to transition towards electric vehicles.
- Headed a team of five interns to collect data on the state-of-the-art electric vehicles, electric vehicle supply equipment, the various costs associated with their implementation and operation, and the federal and state-level policies pertaining to their deployment in Illinois.

Energy Lab Australia *Sydney, Australia*

Intern | Full-time *Jul. 2017 - Oct. 2017*

- Researched and analyzed renewable energy investment patterns to develop a professional and collaborative startup ecosystem to support and connect clean energy entrepreneurs in Australia with mentors, partners and investors.

Schneider Electric Pakistan *Karachi, Pakistan*

Mechanical Design Engineer | Full-time *Mar. 2016 - Dec. 2016*

- Led the Engineering team's data integration into S.A.P. This included seamless integration of more than 10,000 engineering parts and assemblies and their drawings into the newly acquired enterprise resource planning software.

Publications

M. T. Khalid, L. Appiah, and A. P. Witmer, " Design and Application of the Contextual Decision-making Framework to the Problem of Maximum Demand Charges in Small-town America," Under preparation.

M. T. Khalid, P. Teckchandani, and A. P. Witmer, "Alternatives to Maximum Demand Charges in the US: A Historical Perspective," Under review, The Electricity Journal.

M. T. Khalid and A. P. Witmer, "Prompt Engineering for Large Language Model-assisted Inductive Thematic Analysis," Under Review, Social Science Computer Review, preprint arXiv:2503.22978, 2025.

M. T. Khalid, L. Appiah, and A. P. Witmer, " Contextual Inquiry: Seven Guideposts of Understanding Community Context," Proceedings of Engineering Education for Sustainable Development, 2025.

M. T. Khalid, M. V. Benito, A. Rzonca, and A. P. Witmer, " An Introduction to "Alternative Fuel Grades" for Electric Vehicle Fast-Charging," Under review, Journal of Cleaner Production.

M. T. Khalid and A. P. Witmer, "The Importance of Community's Context to Societal Electric Vehicle Adoption Modelling," Under review, International Annual Conference and 46th Annual Meeting American Society for Engineering Management, 2025.

M. T. Khalid, A. P. Witmer, and P. Sauer, " Managed charging Solution to Mitigate Adverse Impact of the Maximum Demand Payment Component of a Commercial Electric Vehicle Fast-charging Facility's Electricity Bill," CIGRE Grid of the Future Symposium, 2022.

M. Yang, S. Sandu, W. Li, and **M. T. Khalid**, "Renewable Energy in Australia: A Wider Policy Discourse," Chinese Journal of Population, Resources, and Environment, 2019.

M. T. Khalid, "Regulatory frameworks to ensure supply reliability in Australia.," Graduate Thesis, University of Technology Sydney, 2019.

Awards, Fellowships, & Grants

2024	**University of Illinois Urbana Champaign Research Park Most Outstanding Graduate Intern Award** ,	*Finalist*
	Mavis Future Faculty Fellowship ,	*Recipient*
	Tadao Murata Graduate Fellowship in Electrical and Computer Engineering ,	*Recipient*
	University of Illinois Urbana Champaign Dissertation Travel Grant ,	*Recipient*
	Behavior, Environment, and Climate Change Conference Fellowship ,	*Recipient*
2023	**University of Illinois Urbana Champaign Research Park Most Outstanding Graduate Intern Award** ,	*Recipient*
2019	**University of Technology Sydney Dean's Academic Merit Award** ,	*Recipient*

Talks

M. T. Khalid and A. P. Witmer, "A Contextual Engineering Approach to Electric Utility Decision-making," Poster: IEEE Energy and Policy Forum, 2025.

M. V. Bentio and **M. T. Khalid**, "Managed Charging Solution for Electric Vehicle Fast-charging," Undergraduate Poster: Power and Energy Conference at Illinois, 2025.

M. T. Khalid, "Application of Contextual Decision-making Framework to the Problem of Maximum Demand Charges in Paducah, KY," Oral Presentation: ECE 590 I, University of Illinois Urbana Champaign, Fall '24.

M. T. Khalid, "Alternatives to Maximum-demand Charges for Electric Vehicle Charging: A Historical Perspective," Oral Presentation: ECE 590 I, University of Illinois Urbana Champaign, Spring '24.

M. T. Khalid, "Contextual Evaluation of the Maximum Demand Payment Component of Electricity Bill for Electric Vehicle Charging," Oral Presentation: ECE 590 I, University of Illinois Urbana Champaign, Fall '23.

M. T. Khalid, A. P. Witmer and K. Haran, "The Importance of Context in Societal Electric Vehicle Adoption," Oral Presentation: Behavior Environment and Climate Change Conference, 2023.

A. Rzonca and **M. T. Khalid**, "Managed Charging to Mitigate Energy Demand at Electric Vehicle Fast-charging Facilities," Undergraduate Poster: Power and Energy Conference at Illinois, 2023.

J. Altenberg and **M. T. Khalid**, "Contextual Engineering Application to Advance Transportation Electrification," Undergraduate Poster: Power and Energy Conference at Illinois, 2023.

M. T. Khalid, "Managed Charging Solution to Mitigate Adverse Impact of the Maximum Demand Payment Component of a Commercial Electric Vehicle Fast-charging Facility's Electricity Bill," Oral Presentation: ECE 590 I, University of Illinois Urbana Champaign, Fall '22.

M. T. Khalid, A. P. Witmer, and P. Sauer, "Advancing Deeper Penetration of Electric Vehicle Fast-charging Facilities in Communities: A Contextual Approach," Oral Presentation: Behavior Environment and Climate Change Conference, 2022.

Teaching Experience

Spring '22	**ECE 206: Electric and Electronic Circuits Laboratory**, Teaching Assistant
Spring '21	**ECE 307: Techniques for Engineering Decisions**, Teaching Assistant
Fall '21	**ECE 333: Green Electric Energy**, Teaching Assistant

Mentoring

2025	**Winston Kim**, Department of Environmental Engineering, University of Illinois Urbana Champaign
2024-2025	**Marisol Benito**, Department of Physics, University of Illinois Urbana Champaign
2023-2024	**Pranshu Teckchandani**, Department of Electrical and Computer Engineering, University of Illinois Urbana Champaign
2022-2023	**Jessica Altenberg**, Department of Mechanical Science and Engineering, University of Illinois Urbana Champaign
2022-2023	**Ariette Kaberlien**, Department of Aerospace Engineering, University of Illinois Urbana Champaign
2022-2023	**Arin Rzonca**, Department of Computer Science, University of Illinois Urbana Champaign

Outreach & Professional Development

Service and Outreach

2022-2024	**Power and Energy Conference at Illinois**, Committee Member

Peer Review

Renewable and Sustainable Energy Reviews
Power and Energy Conference at Illinois