

# CHARAN PUSHPANATHAN PRABAVATHI MS

(+1) 582-203-8144  
charanppi603@gmail.com  
<http://charanpushpanathan.com>

**EDUCATION**

**Pennsylvania State University, University Park** State College, PA  
*MS. in Informatics, Human Computer Interaction* 08/ 2023 - 05/ 2025 (*expected*)

- Advisor: Prof. John M. Carroll
- GPA: 4.0/4.0

**Kumaraguru College of Technology, Affl. Anna University** Coimbatore, India  
*B.E. in Computer Science and Technology* 08/ 2019 - 04/ 2023

- Advisor: Prof. L. Latha and Prof. G. Kanagaraj
- GPA: 8.12/10.0, Rank: First Class.

**PUBLICATIONS**

1. Ya Fang Li, Xiaotian Li, Wan Hsuan Huang, **Charan Pushpanathan Prabavathi**, Jie Cai, John M Carroll. Parental Collaboration and Closeness: A Co-Design Exploration with New Couple Parents. *CHI Conference on Human Factors in Computing Systems [Under Review]*, 2025.
2. **Charan Pushpanathan Prabavathi**, Ya Fang Li, John M Carroll. Design Rationale: Co-Ordination System. *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems [ongoing]*, 2025.

**RESEARCH EXPERIENCE**

**Graduate Research Assistant, Collaboration Innovation Laboratory**  
*College of Information Sciences and Technology, State College, PA* 01/ 2024 - Present

- Through 10 co-design workshops with parent couples, we explored how technology could enhance co-parenting closeness. Our qualitative analysis revealed opportunities for technologies that promote interdependence and integrate positive emotions into shared parenting experiences.
- Led design and prototype development of a novel co-parenting technology system as primary author; preparing extended abstract submissions
- Conducted comprehensive analysis of 80+ research papers spanning HCI, sociology, and anthropology to inform co-parenting technology design
- Synthesized multi-disciplinary literature on family relationships, closeness, and togetherness to structure research direction, Leads to CHI-2025

**TEACHING EXPERIENCE**

**IST 505 - Foundations of Research Design in Information Sciences and Technology**  
*w/ Prof. Xiaolong Luke Zhang, College of IST* Starting Spring 2025

**IST 526 - Development Tools and Visualizations for Human-Computer Interaction**  
*w/ Prof. Xiaolong Luke Zhang, College of IST* Starting Spring 2025

**IST 402 - Emerging Issues and Technology: Computer Graphics and Virtual Reality**  
*w/ Prof. Xiaolong Luke Zhang, College of IST* Fall 2024

**IST 504 - Foundations of Theories and Methods of Information Sciences and Technology Research**  
*w/ Prof. Xiaolong Luke Zhang, College of IST* Fall 2024

PROFESSIONAL  
EXPERIENCE

**Product Designer Intern**

*HDFC Bank Limited, India*

11/ 2022 - 06/ 2023

- Spearheaded design efforts in account aggregator financial data sharing, bill payments & utilities, schemes, lending services, consumer rewards, and payments.
- Implemented comprehensive benchmarking activities resulting in visual design enhancements. Led innovation assistive technology product ideation to build phase as an individual.
- Revamped interfaces for digital banking (achieving a 93% User Acceptance Testing (UAT) success rate for the new system), performed field studies, and developed information architectures.

**Founding Member and Designer**

*Angel Startup in Capital Market (Closed Startup), India*

08/ 2022 - 10/ 2022

- As founding designer, led design and strategy for the biggest capital market platform for supporting social learning and investing.
- Planned interfaces for prototyping presented in pitches, conceptualized the business model, and catered to customer requirements.
- Explored diverse concepts in the Indian capital markets, spanning stocks, brokerage, lending, and investments.
- A team of 6 individuals, ahead of seed funding, has closed the startup due to a regulatory impact in the securities market.

**Product Designer Intern**

*Freecharge backed by Axis Bank Limited, India*

07/ 2021 - 01/ 2022

- Focused on Neo-Banking (20M users) emailers, Pay-later (30M users) features, the wallet application for Axis Bank, mutual funds, utility bill payments, and user account management.
- Designed interfaces and product revamps, PWAs, and wireframes, and spearheaded qualitative research. Research focuses on user interviews, field studies, usability tests, A/B tests, and design iterations.
- Nominated for the Tech Award due to significant contributions to Neo-banking emailers along with ten senior designers.

**Trust and Decision-Making with Explainable AI in XR - Literature Review**

*IST 597: Explainable AI, w/ Prof. Jonathan Dodge<sup>a</sup>*

Fall 2024

- Contributed to systematic literature review we analyzed 89 papers on trust and decision-making in XR environments, identifying key mechanisms for AI explainability and user trust calibration.
- Developed framework for evaluating explanation techniques in immersive interfaces, examining impact of visualization methods on user understanding and trust formation.
- Analyzed ethical implications of AI in XR applications, focusing on transparency, bias mitigation, and trust calibration strategies for human-AI collaboration.

**Machine Learning and Reinforcement Learning - Course Project**

*IST 597: Explainable AI, Prof. Jonathan Dodge*

Fall 2024

- Developed and evaluated MDP agents using Q-learning, policy iteration, and deep Q-networks, implementing agents for sequential decision-making that achieved optimal policies across multiple domains.
- Implemented feature engineering techniques and debiasing transformations for explainable machine learning models, focusing on fairness and bias mitigation in high-stakes decision domains.
- Analyzed model behavior and decision boundaries using multiple explainable AI frameworks (AIX360, LIME, SHAP), generating interpretable explanations and visualizations to assess model predictions and feature importance.
- Created Markov Decision Process models and hierarchical task analysis for sequential planning domains, achieving optimal policies through value/policy iteration and reinforcement learning approaches.

**Natural Language Understanding - Course Project**

*IST 597: Human Centered Artificial Intelligence, w/ Prof. Syed Billah*

Fall 2024

- Developed a conversational AI agent using LangChain and custom tools, implementing arithmetic operations and web crawling capabilities with vector storage for enhanced information retrieval and real-time content understanding.
- Built and fine-tuned a GPT-2 language model using PEFT/LoRA techniques to convert natural language queries into First-Order Logic statements, achieving performance comparable to larger models while maintaining efficiency.
- Created a multimodal chatbot integrating vision language model (Phi-3), speech recognition (Whisper), text-to-speech (FastSpeech2), and image generation (Stable Diffusion) capabilities through Hugging Face's ecosystem.
- Implemented reinforcement learning agents using MinWoB++ and Gymnasium environments to automate UI tasks, incorporating workflow-guided exploration (WGE) and learning from human demonstrations for web automation.

**Post and Gather - Course Project**

*IST 521: HCI - Human and Technology, w/ Prof. Frank E Ritter*

Spring 2024

- Conducted qualitative user research through in-depth interviews with event organizers (n=1) and attendees (n=4), employing structured interview protocols and thematic analysis to identify key user needs.
- Performed Hierarchical Task Analysis (HTA) to decompose complex event management workflows, identifying 10 critical tasks and optimizing system architecture based on user behavior patterns.
- Applied evidence-based HCI methodologies including task analysis, user journey mapping, and iterative prototyping to develop an integrated event platform serving Penn State's 24 campuses.
- Leveraged qualitative findings to implement user-centered features like personalized event feeds and automated notifications, addressing specific pain points identified through systematic research.

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<sup>a</sup><https://charanpushpanathan.com/files/IST597XAI.pdf>

INVITED TALKS    **Persuasive Design: Influencing Billions of Mobile Users**  
*Dept of CSE, Kumaraguru College of Technology*    01/ 2023  
**How to Present an Presentation - VC pitches and Academia**  
*Dept of CSE, Kumaraguru College of Technology*    12/ 2022

SKILLS    **Languages:** Tamil, English.  
**Software:** Sketch, Figma, Keynote, Zeplin.  
**Programming:** Python, JavaScript, NoSQL, Cloud Computing, HTML/CSS,  
Data Visualization

TEST SCORES    **American English Oral Communicative Test (AEOCPT), Score: 293/300**  
*Qualifies for TA Positions, Dept of Applied Linguistics, Pennsylvania State University Fall'24*

Last Updated 12/ 2024