

# Harsh Deep

## Curriculum Vitae

Modern Treasury - Software Engineer II (International Payments)

Prev: University of Illinois at Urbana Champaign

### RESEARCH INTERESTS

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CS Education, Accessibility, Human-computer interaction, Impact of Disability, Applied AI, Gaze-based computer interaction, Virtual Reality, Explainable AI, Statistical Computing

### EDUCATION

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Aug 2018 – **University of Illinois at Urbana-Champaign**, Urbana, IL

May 2022 *Bachelor of Science in Statistics and Computer Science*, **GPA: 3.68/4.00**

Relevant Coursework Data Structures, Systems Programming, Experimental Methods for HCI, Cognitive Engineering (grad), Statistics and Probability I&II, Methods of Applied Statistics

### PUBLICATIONS

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2020 Measuring Complacency in Humans Interacting with Autonomous Agents in a Multi-Agent System  
Keywords: human-autonomy teaming, reinforcement learning, over-trust, complacency  
Rodriguez S., Chen J., **Deep H.**, Lee J., Asher D., and Zaroukian E.  
Society of Photo-Optical Instrumentation Engineers (SPIE) Defense + Commercial Sensing Proceedings

2021 What's This? A Voice and Touch Multimodal Approach for Ambiguity Resolution in Voice Assistants  
Keywords: Augmented Reality, Voice Assistants, Natural Language Processing, Context Aware AI  
Jaewook Lee, Sebastian S Rodriguez, Raahul Natarajan, Jacqueline Chen, **Harsh Deep**, Alex Kirlik  
Proceedings of the 2021 International Conference on Multimodal Interaction (ICMI)

2023 Validating Trust in Human-Robot Interaction Through Virtual Reality: Comparing Embodied and "Behind-the-Screen" Interactions  
Keywords: Human-robot interaction, Embodied agents, Signal detection theory, Virtual reality, Trust calibration, Decision support systems  
Sebastian Rodriguez, **Harsh Deep**, Drshika Asher, James Schaffer, Alex Kirlik  
Emerging Technologies and Future of Work. AHFE (2023) International Conference. AHFE Open Access, vol 117. AHFE International, USA

### PRESENTATIONS

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2021 Webcam Eye-Tracking Based Accessibility for ClassTranscribe  
**Harsh Deep**, Joanna Huang, Rashi Dembi, Omar Khan  
UIUC 2021 Undergraduate Research Symposium

2021 Summer of Side Projects: A Project-Based Program for CS1 Students, Made By Course Staff  
Monica Para and **Harsh Deep**  
iCSTWS 2021 - Illinois Computer science Summer Teaching Workshop

- 2021 Understanding of the needs of students with disabilities based on Universal Design of Learning principle  
Kendra Walther, Erin Carrier, Lawrence Angrave, Hongye Liu, **Harsh Deep**, Zhilin Zhang  
2021 CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference
- 2022 ScribeAR, an Automated Live-captioning Augmented Reality System  
Abhiram Tamvada, Joanna Huang, **Harsh Deep**  
UIUC 2022 Undergraduate Research Symposium
- 2022 Building Community in Virtual Open-Source Learning  
Monica Para, David An, Saurav Chittal, **Harsh Deep**, and Drshika Asher  
iCSTWS 2022 - Illinois Computer science Summer Teaching Workshop

## TEACHING EXPERIENCE

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### SP22 **UIUC CS 225: Data Structures**

#### Course Assistant

- Held Deadline Office hours at major assignment due dates and was the course assistant for 2 lab sessions every week
- Organized, planned and taught all three Exam Review sessions
- Mentored 2 final project groups across multiple check-ins and final grading
- Initiated efforts on the CS 225 textbook based on the class content
- Made longer term suggestions for the move for MPs to Prairielearn, improving the automated extension workflow, and adding theory content

### FA21 **UIUC CS 277: Algorithms and Data Structures for Data Science**

#### Course Assistant

- Sole CA for the pilot version of the class for the new Data Science program
- Rewrote several lab assignments for efficient Python that were inspired by the C++ labs of CS 225: writeups, test cases and gradescope software integration
- Managed most of the office hours for the course and reviewed the various exams
- Had weekly meetings to keep adjusting the overall course flow to align with the drastically different student population of the Data Science programs vs the typical Computer Science crowd

### SP21 **UIUC CS 125: Intro to Computer Science**

#### Head Course Assistant

- Co-led a group of staff of 200+ undergraduate and graduate staff to help teach a large intro class
- Creating processes for accountability, documenting knowledge of practice and leading diversity related initiatives

### SP20 **UIUC CS 199 IKP: Undergraduate Open Seminar in Computer Science**

- Established CS199: Introduction to Kotlin Programming with Prof. Geoffrey Challen, teaching Kotlin to 50+ students for the first time at UIUC.
- Contributed to core course content, administration and organizing final projects.

FA20 **UIUC CS 125: Intro to Computer Science**

Course Associate

- Revived CS199: EMP (Even More Practice) which was an extra review class for intro CS concepts with several extra problems every week
- Started and led international time zone office hours to accommodate students in other countries due to the pandemic.
- Pushed for changes towards better support for disabilities and gender minorities.

SP19, FA19 **UIUC CS 125: Intro to Computer Science**

Course Developer

- Reduced grading times for daily homework by about 50x using a RabbitMQ distributed cluster
- Discovered multiple security exploits affecting class grading with attendance, code style points and container grading isolation (70% of the student grade impacted)

## INDUSTRY EXPERIENCE

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Mar 2024 - **Modern Treasury**

Software Engineer II

- Tripled the international SWIFT Wire Transfer Currencies Available on the platform to 80+ countries supported with JPMC
- Contributed to \$437k in additional annual revenue through helping land enterprise deals based on new technical features

Jul 2022 - **Modern Treasury**

Feb 2024 Software Engineer I

- Implemented new banking integrations automated low-cost international payments terminating in the UK (BACS/CHAPS), Europe (SEPA, Nordic countries), Australia (BECS) and Hong Kong (CHATS) which collectively represent millions of dollars being moved per month.

May 2020 - **Abstractive Labs**

Aug 2020 Software Engineering Intern

- Created a distributed Slack chatbot framework in Ruby by extracting common functionality from a supply chain management system.
- Reduced the codebase by 2000+ lines of code removing the business specific logic while keeping core functionality intact allowing other open-source contributors to engage with the project

Dec 2017 - **Harshita Apps, Bangalore, India**

Jul 2018 Backend Developer

- Sole backend developer for Crypto Price Tracker App (JavaScript, ExpressJS), live tracking 1000+ currencies across 30+ exchanges.
- Reached the top iOS app download charts in India (Overall) and the United States (Finance), requiring scaling the Firebase application infrastructure to 100k+ users.
- Optimized infrastructure using concurrency to reduce cloud costs by 48% post acquisition by Redwood City Ventures (California, USA).

## AWARDS AND HONORS

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2021 **Research Support Grant by Office of Undergraduate Research (OUR)**

2022 **Scott Fisher Outstanding Course Assistant Award**