# LAKSHITA DODEJA

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## EDUCATION

**Brown University**  <span style="float:right">**Providence, USA**</span>
Doctor of Philosophy in Computer Science, **GPA: 4.0/4.0**  (Aug' 23 –Present)
Advised by Prof. Stefanie Tellex

**Georgia Institute of Technology**  **Atlanta, USA**
Masters in Computer Science, **GPA: 4.0/4.0**  (Aug' 21 –May'23)
Specialization – Computational Perception and Robotics

**National Institute of Technology (NIT)**  **Kurukshetra, India**
B.Tech. (Hons) Computer Science, **GPA: 9.35/10**  (Aug' 14 – May' 18)
Graduated as one of the top 10 students in the department

## PUBLICATIONS

1. **Lakshita Dodeja\*,** Pradyumna Tambwekar\*, Erin Hedlund-Botti, and Matthew Gombolay. "Towards the design of user-centric strategy recommendation systems for collaborative Human-AI tasks" (*In International Journal of Human-Computer Studies* ) (\* denotes equal contribution)
2. Pradyumna Tambwekar, **Lakshita Dodeja**, Nathan Vaska, Wei Xu, Matthew Gombolay (2023). A Computational Interface to Translate Unstructured Commander's Intent into a Machine Readable Specification *(In EMNLP'23)*
3. Palak Garg, **Lakshita Dodeja**, Priyanka, Mayank Dave (2019). "Hybrid color image watermarking algorithm based on DSWT-DCT-SVD and Arnold transform." (*In Advances in signal processing and communication*. Springer, Singapore, 2019. 327-336.)

## RESEARCH EXPERIENCE

**Graduate Researcher, Advisor : Dr Stefanie Tellex, Brown University**  (Aug' 23 –Present)
*Fine-tuning Generalist Robot Policies using Online Adaptation*
- Working on a novel fine-tuning framework for foundational robotics models, facilitating rapid adaptation to environmental changes and task dynamics with minimal demonstration data.
- Using Online Reinforcement Learning to adapt to changes in the environment and learn a locally expert policy.
- Evaluating foundation models for robotics on different manipulation tasks in simulation as well as on a franka arm.

**Graduate Researcher, Advisor : Dr Matthew Gombolay, Georgia Tech**  (Aug' 21 – Jul'23)
*Studying Human Preferences for specifying strategies*
- Lead a user study to understand how humans like to be recommended strategies for solving complex tasks
- This highly comprehensive study spanned across ~100 participants
- Several validated surveys were used to measure the perception of a recommendation system including the System Usability Survey (SUS), the NASA TLX, and the Godspeed Perceived Intelligence survey.
- Additionally, we developed a novel questionnaire for objectively measuring participants' general preference toward a strategy recommendation system.

*Extracting Goals and Constraints from Strategy descriptions*
- Developed a NLP model to convert unstructured natural language strategies into a format that is understandable by machines for the board game RISK
- Applied various NLP techniques to increase the performance of the model, including augmenting the data using paraphrasing software, adding CLS-tokens for goals, pretraining with synthetically generated data, and using pre-existing language models.
- Our Natural Language Model performed significantly better than Humans in inferring intent ($p<0.05$)

**Undergraduate Researcher, Advisor : Dr Mayank Dave, NIT Kurukshetra**  (Aug' 17 – Apr' 18)
*Digital Image Watermarking*
- Developed a new algorithm for digitally watermarking colored images using Discrete Stationary Wavelet Transform (DSWT), Singular Value Decomposition (SVD), Discrete Cosine Transform (DCT) and Arnold Transform

- Achieved 0.95 as our highest Normalized Correlation (NC) value and the proposed algorithm gave a better Peak Signal to Noise Ratio (PSNR) by 22%
- Published paper "*Hybrid Color Image Watermarking Algorithm Based on DSWT-DCT-SVD and Arnold Transform*" in **Springer**

*Wireless Sensor and Actor Networks*
- Simulated an energy-efficient rekeying mechanism for clustered WSAN and compared it with Sequence Based Key Management Scheme (SKM)
- Number of links rekeyed dropped by 50% in both multi-hop and single-hop networks
- Energy consumption of key refresh operations also dropped by 34% in single-hop networks and 10% for multi-hop networks

**Summer Research Intern, IIT, Hyderabad**                                    (May' 16 - Jul' 16)
- Compared performance of YouTube over MPTCP vs WLAN vs LTE
- Developed an app to estimate the Quality of Experience (QoE) of the user in terms of Mean Opinion Score (MOS) and recorded a 34.4% better MOS than LTE and 20.4% better MOS than WLAN for MPTCP

# WORK EXPERIENCE

**Graduate Teaching Assistant, Georgia Tech**                            **Atlanta, Georgia**
Course – Robot Intelligence and Planning                                    (Jan'22 – May'22)
- Grading assignments and clearing doubts for a class of 100 students

**Amazon Development Centre**                                            **Bangalore, India**
Amazon Prime Verification Team
**Software Development Engineer – II**                                    (Oct'20 – July'21)
*Plug and Play Verification*
- Developed plug and play widgets for customer segment verification throughout Amazon.
- Designed a generic and reusable flow of providing the verification widgets to the customers

**Software Development Engineer - I**                                    (Jun' 18 – Sep'20)
*Military Identity Realtime Verification*
- Led the development of a real time military identity verification software for veteran day
- Integrated our system with a third party for providing military data and performed various performance and load tests
- Successfully ran a seven-day long campaign registering 500k+ customers

*Manual Document Verification*
- Conceptualized, designed and developed a process for manual document verification
- Configured secure storage of documents, structured the Data Access Object and built the flow for Customer Service Agents to verify the documents

*Student Identity Realtime Verification*
- Developed a comprehensive reusable system in java for real-time verification for student identity
- The new system helped reduce illegal signups of prime student program and provided a smooth user experience with reduced average latency of 2 seconds

**Software Development Engineer – Intern**                                (May' 17 – July' 17)
- Developed an Internal Tool for Prime Student Team to help product managers track and analyze customer data better
- Configured new tables and their schema in an Amazon internal database system, exposed a UI with restricted access and made changes in the retail website to pick up information from the new source
- Ranked among the top interns across India and was offered a preplacement offer from Amazon

# PROJECT EXPERIENCE

- Developed a NLP model to detect social biases in language using reddit and twitter data          (2022)
- Developed a NLP model to predict if an argumentative essay was effective in its writing          (2022)
- Trained agents using Language and Vision Conditioned Imitation Learning on BabyAI to achieve better performance than FiLM for more complex levels          (2021)
- Study on adversarial attacks and defences for monocular depth estimation          (2021)
- Represented NIT Kurukshetra in the grand finale of **Smart India Hackathon**, organized by the Prime Minister and developed an application for visually impaired people to perform various functions on computer          (2018)

# AWARDS & SCHOLARSHIPS

- Scholarship awarded by College of Computing, Georgia Tech to attend **Grace Hopper Conference**          (2022)
- First runner's up at **NIT KKR Hackathon** twice powered by **HackerEarth**, for developing a real time health monitoring system for hospitals and for building a college website for          (2018, 2016)

first year students
- Secured college rank 3 in **ACM-ICPC** (Inter Collegiate Programming Competition) (2017)
- Awarded the prestigious **KVPY scholarship** by the Indian government to promote STEM education out of 100,000 students across India (2014)

## VOLUNTEER WORK

- Serving on the DEI committee for Graduate Student Council, Brown University (2024)
- PhD Recruitment visit day coordinator for CS department at Brown University (2024)
- Student volunteer for Conference on Robot Learning (CoRL) (2023)

**Languages Skills –** ROS, Python, R, C, C++, Java, Perl, HTML, Javascript, SQL