

Vineet Vinayak Pasupulety

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EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY | MS IN COMPUTATIONAL SCIENCE & ENGINEERING

Specialization: Computer Vision, Deep Reinforcement Learning, Natural Language Processing
August 2017 - Expected May 2019 | College of Computing, Atlanta, GA | CGPA: 3.42/4.00

NATIONAL INSTITUTE OF TECHNOLOGY | BTech IN ELECTRONICS & COMMUNICATION ENGINEERING

July 2013 - May 2017 | Trichy, India | CGPA: 8.9/10.0 (Distinction with First Class)

SKILLS

PROGRAMMING/SCRIPTING LANGUAGES

Proficient: C++ • Python • SQLite • MATLAB • HTML/CSS • JavaScript • Shell • \LaTeX
Familiar: R • Java • Mathematica • PHP • GAMS

FRAMEWORKS/LIBRARIES/TECHNOLOGIES

Proficient: Keras • TensorFlow • NLTK • OpenCV • Scikit-Learn • Numpy • D3 • PyTorch • Flask • AJAX • Git
Familiar: Hadoop • Pig • Spark • Azure • EC2 • S3 • Google App Engine

EXPERIENCE

AMAZON | RESEARCH INTERN

May - August 2018 | Boston, Massachusetts

- Worked in the Conversational AI team in Alexa AI Research under **Dr. Alborz Geramifard**
- Designed deep learning models to capture sentiment in unique dialogue turns in a context-sensitive setting; provided this as a reward signal to improve Alexa's turn-level dialogue policy
- Trained on exhaustively curated datasets of 500 dialogues and 7000 user utterances; Full Training achieved in 1 hour
- Developed with **PyTorch** as a deep learning classifier for an Alexa skill called **MovieBot**.

ADOBE | RESEARCH INTERN

May - August 2017 | Bangalore, India

- Designed deep learning models to capture complex edits Photoshopped onto natural images; trained them on exhaustively curated datasets of 9000 images, 1300 Photoshop tools and 178 tutorials
- Performed Dependency Parsing/Vector Space Analysis/Topic Modelling to map Photoshop tool-effect-region tuples into meaningful tutorial steps for novices; Full Training achieved in 15 hours
- Developed with **TensorFlow/NLTK/OpenCV and D3** for plugin for Photoshop CS6. Patent Submitted.
- Awarded the **"Most Creative Research Project"** for 2017 amongst 23 teams at the Big Data Experience Labs

NATIONAL UNIVERSITY OF SINGAPORE | RESEARCH ASSISTANT

May - July 2016 | Singapore

- Worked under **Professor Mark Goh** at **The Logistics Institute - Asia Pacific**
- Applied data mining and game theoretic frameworks to model business flows in Asia's dynamic aviation market
- Published 2 international conference papers at **ISL** and **AED** - nominated for **"Best Student Paper Award"**

RESEARCH

VISUAL INTELLIGENCE LAB | GRADUATE STUDENT RESEARCHER

August - December 2018 | Atlanta, GA

- Working with **Dr. Devi Parikh**, **Dr. Stefan Lee** and **Dr. Peter Anderson** on using Domain Randomization to improve reinforcement learning agents abilities on a task called **EmbodiedQA**
- Embodied Question Answering is a new AI task where an agent is spawned at a random location in a 3D environment and asked a question ("What color is the car?"). In order to answer, the agent must first intelligently navigate to explore the environment, gather information through first-person (egocentric) vision, and then answer the question ("orange").
- Built using **PyTorch**. Engineered the training framework to permit dynamic domain randomization - choosing different dynamics with a variety of possible options during training so that the real world appears to be another variation of the randomized training domains

INSTITUTE FOR ROBOTICS AND INTELLIGENT MACHINES | GRADUATE STUDENT RESEARCHER

March – May 2018 | Atlanta, GA

- Working with **Dr. Byron Boots**, **Dr. Evangelos Theodorou** and **Dr. Seth Hutchinson** on using Probabilistic Differential Dynamic Programming (PDDP) for Hierarchical Control of a Wheel Inverted Pendulum Humanoid called **Golem Krang**
- Used a simple Linear Quadratic Programmer for the low-level turn-based tasks along the 18 degrees of freedom, and a PDDP trained using Gaussian Processes for the high-level controller, that kept the center of mass in equilibrium based on the inputs from the low-level controller
- Built using **DART**. See **report** and **presentation** for more details

DATA ANALYTICS & SIMULATION LAB | GRADUATE STUDENT RESEARCHER

August 2017 – January 2018 | Atlanta, GA

- Worked with **Dr. Hongyuan Zha** on generating visual questions by knowledge guided assistance for deep reasoning
- Designed a framework for searching scene graphs of images, then querying an existing knowledge base for n-hop facts, and finally using TranE embeddings to convert a fact embedding into a question using RNNs

PATTERN RECOGNITION & COMPUTATIONAL INTELLIGENCE LAB | UNDERGRADUATE RESEARCHER

Jan 2017 – May 2017 | Trichy, India

- Developed sentiment mining algorithms to rate 142.8 million online product reviews on basis of polarity & subjectivity/objectivity; achieved 72% accuracy compared to GroundTruth ratings
- Concisely visualized classified reviews; achieved cache oblivious improvement of 27 minutes
- Developed with **Numpy/Matplotlib/NLTK/Django and D3** for my Bachelors Thesis under **Dr. ES Gopi**

PROJECTS

INTRINSICALLY MOTIVATED CONTEXTUAL BANDITS | Code

- Worked with **Dr. Swati Gupta** and developed in **Tensorflow**
- Posed the problem of exploration in reinforcement learning as a contextual bandits Q-function ensemble, where each bandit was empowered by intrinsic motivation functions such as curiosity to help discover new and improved trajectories for efficient and qualitative search

CAPTIONING-VQA | Code | Video

- Worked with **Dr. Devi Parikh** and developed in **PyTorch**
- Created word, image embeddings from pre-trained Image Captioning models to act as context attention for a deep neural Visual Question Answering encoder-decoder framework

ORIOS | Code

- Built an app in a team for the **GT CoC Make A Difference Hackathon 2018** and developed in **Golang**
- A blockchain-cum-Facial Recognition application for identifying refugees and redirecting aid resources at refugee camps.
- A Tieron blockchain is used to keep track of refugee details as they wander between camps. Azure Facial recognition helps to ID refugees and query the blockchain

INTERPOLO | Code | Poster

- Worked with **Dr. Polo Chau** and developed in **Flask, AJAX, D3.JS and HTML/CSS**
- Interactive Visualisations and Analytics on-demand of worldwide Terrorism between 1970-2016

TRASHMAFIA | Code | Pitch Deck

- Developed in **Node.JS, Jade, MongoDB, C++ and HTML/CSS**
- Judged the **Best Student Idea Award** out of 368 entries at **Ventura 2016** by VCs from Sequoia Capital
- An app to connect trash collectors and disposers through a sustainable Waste Recycling Supply Chain

QUICKSIGN | Code | Poster

- Developed in **Laravel PHP, MySQL and HTML/CSS**; Finalist at the **Sangam Exhibition, Pragyan 2017**
- Custom E-Signature site for secure, efficient and timely document attestation in "redtape" institutions

CHESSICA | Code | Report

- Developed in **C++**. Resulted in appointment as 1st year Undergrad TA for CS101 practicals at NITT
- Chess AI for single & 2 player games; 72% win-ratio for human vs AI games