Aalind Singh

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Education

2015 – 2019 **B.Tech in Information Technology**, *Vellore Institute of Technology (VIT), India*.
CGPA – 9.11/10.0 (Top 3%)

1/2019 – 6/2019 **Semester Abroad Student**, *Nanyang Technological University (NTU), Singapore*, Advisors – Nadia Magnenat Thalmann and Daniel Thalmann.
Thesis – Visual Awareness in Social Robots

Research Interests

Machine Learning, Natural Language Processing, Healthcare, Speech Processing, Social Robotics.

Work Experience

9/2019 – present **AI Research Engineer**, *DEX-Lab Ltd, Singapore*.

- Building AI augmented social robots and virtual assistants for solving problems in healthcare and education. Worked on designing the behaviour tree of the virtual human to deal with diverse patient scenarios and daily human interactions.
- Built generative seq2seq-based chatbots to proactively engage people in old age homes and people with neurodegenerative diseases like Schizophrenia, Dementia with interactive conversations. Architecture was based on encoder-decoder LSTM-based approaches with BERT embedding vectorization.
- Worked on building the facial recognition modules adhering to the PDPA guidelines issued by the Singapore government. Used Facenet Inception-Resnet v2 architecture and MTCNN face detection method for implementation using Tensorflow, OpenCV libraries.
- Built a real-time 3D multi-person pose estimation model in PyTorch with 2D, 3D coordinate detection of up to 18 keypoints. Used the OpenVINO backend for fast inference on CPU.

6/2017 – 8/2017 **Software Engineering Intern**, *Comviva, Bangalore*.

- Worked as a fullstack intern and made an online wallet prototype named Mobiquity.
- Used Angular for building the cross-platform application along with integrating client API's, payment gateways and dealing with transaction failure.

Research Experience

1/2019 – 6/2019 **Research Intern**, *Institute for Media Innovation (IMI), NTU, Singapore*.
Advisors – Nadia Magnenat Thalmann and Daniel Thalmann

- Worked at the intersection of computer vision and natural language processing for scene based question answering (Visual Dialog) to make the humanoid robot *Nadine* more environment aware. Built a neural model, with Memory Network encoder and Discriminative decoder with training done on the VisDial dataset.
- Revamped the architecture of the humanoid robot *Nadine*, which included rebuilding it's perception and affective layers to facilitate a better human-robot interaction experience.
- Conducted a prolonged psychological study for human-humanoid collaboration in co-working spaces. Paper accepted at *IEEE Ro-Man'19*.
- Worked on building a Virtual Human Platform for diagnosis of Schizophrenia. Used emotion related low level speech signals, body movements and abnormal topic shifts for prediction. The virtual human was also trained to behave as a negative symptom Schizophrenic patient for providing psychiatric training to medical students.

5/2018 – 7/2018 **Research Intern**, *Computational Intelligence Lab (CIL), NTU, Singapore*.
Advisor – Erik Cambria

- Developed a novel framework for microtext normalization, leveraging on concepts and phonetics. The framework combined sub-symbolic (phonetics) with symbolic (machine learning) AI to automatically detect and transform microtexts to their respective in-vocabulary forms. Concept extraction was done using SenticNet5. Paper accepted at *CSoNet'19*.
- Achieved state of art performance for polarity detection task showing a significant increase of 6% in accuracy compared to other models.
- Built a dataset named CEMt-Norm, for microtext normalization containing sentences full of out-of-vocabulary terms and their respective in-vocabulary forms.

Publications

2019 **PhonSenticNet: A Cognitive Approach to Microtext Normalization for Concept-Level Sentiment Analysis**, Ranjan Satapathy, Aalind Singh, Erik Cambria, Computational Data and Social Networks. CSoNet 2019. Lecture Notes in Computer Science, vol 11917. Springer, Cham , .

2019 **Humanoid co-workers: How is it like to work with a robot?**, Ajay Vishwanath, Aalind Singh, Justin Dauwels, Chua Yi Han Victoria, Nadia Magnenat-Thalmann, 28th IEEE International Conference on Robot and Human Interactive Communication (Ro-Man 2019), New Delhi, India, October 14-18, 2019, .

Submitted.....

2020 **CEMt-Norm: A corpus for English Microtext Normalization**, Ranjan Satapathy, Aalind Singh, Erik Cambria, Submitted to Big Data Journal'20.

Selected Projects

8/2017–10/2017 **Fairness, Accountability and Transparency when treating gender as a variable**, *Ethics in Machine Learning, NLP*, .

12/2017–5/2018 **P-Scan: An application for diagnosing Parkinson's just by analyzing your voice**, *Speech Processing, Machine Learning*, .

2/2019–4/2019 **Environment Aware Social Robots using Visual Dialog**, *Computer Vision, NLP, Machine Learning, Social Robotics*, .

Honors and Awards

2019 **Certificate of Advanced Undergraduate Research**.
Nanyang Technological University, Singapore

2019, 2018 **NTU-India Connect Research Scholarship**.
Nanyang Technological University, Singapore (awarded twice)

2019, 2018 **Special Achiever's Award, VIT University , Vellore**.
Awarded for exemplary performance in various International level events and academics.

Leadership

2017 - 2018 **Google Developers Group, Vellore**, *Vice President*.
Led a team of 50+ members. Brainstorming and building projects mainly focusing on Machine Learning, Web, Android and Hardware.

2016 - 2017 **ACM Student Chapter**, *Executive Committe*.
Organized various workshops and hackathons. Gave talks and demonstrations on topics related to AI, NLP and Web.