

Anand Subramanian

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EDUCATION

- **National University of Singapore** Singapore
Master of Computing (Computer Science); CGPA: 4.36/5. Advised by Prof. Stefan Winkler 2022 - 2023
- **SSN College of Engineering (Affiliated to Anna University)** India
Bachelor of Engineering - Electronics And Communication Engineering; CGPA: 8.21 2015 - 2019

EXPERIENCE

- **ASUS (AICS)** Singapore
AI Research Intern May 2023 - Nov 2023
 - Developed **Clinical Question Answering (QA)** models using **LLMs** with Low-Rank Adapters. Created a novel benchmark evaluation suite comprising 22 diverse datasets to evaluate **Large Language Models (LLMs)** in zero-shot, few-shot and finetuned settings on QA tasks. Work submitted as a paper and under review at **ACL ARR**.
 - Published a paper at the **ImageCLEF MediQA 2023** Workshop, which involved building **Fan-T5 models** for generating medical notes from doctor-patient conversations using novel synthetic data augmentation modules.
 - Developed solutions for database schema generation using **LLMs and In-Context Learning**. Implemented evaluation modules for measuring the performance of the developed solution.
- **RideCell** India
Intern Nov 2022 - Jan 2023
 - Experimented with deep-learning-based representation learning for performing **driving scenario extraction** over a large corpus of drive fleet data.
 - Developed a novel **multi-task LSTM auto-encoder** for self-supervised representation learning from time series that improved performance on clustering purity metrics by a factor of 25% over standard baselines.
- **BUDDI.AI** India
Research Engineer September 2019 - July 2022
 - **Clinical Subsection Identification:** Created OCR-error robust deep-learning models for clinical sub-section identification, achieving improved F1-scores over rule-based methods and other deep-learning baselines. Published work on OCR-error robust solutions at **CODS-COMADS 2023**.
 - **Punctuation Restoration:** Developed a deep learning solution for restoring punctuation in semi-structured transcribed clinical text. Enhanced model performance via multi-task learning and utilizing truecasing as an auxiliary task.
 - **Negated Entity Identification:** Built a deep-learning NER system to identify negated clinical entities, introducing novel feature engineering that outperformed existing methods. Improved downstream task performance by **10%** in accuracy.
 - **Automated Medical Coding:** Developed a system leveraging knowledge graphs and text mining systems over Electronic Health Records (EHRs). Developed inference pipelines and REST APIs for Deep Learning models in **ONNX** and **Tensorflow-Java**.
 - **Clinical Documentation Improvement:** Created a prototype utilizing clinical entity and relation extraction models for Clinical Documentation Improvement.
 - Represented the company by publishing and presenting our work at several prestigious international conferences and workshops (**EndoCV Workshop @ ISBI-2020, EDNIL @ FIRE-2020, ICON-2021, CODS-COMAD 2023**).

SKILLS

- **Languages:** Python, Scala, C++
- **Frameworks:** PyTorch, Tensorflow, ONNX, SpaCy, Scikit, Transformers (HuggingFace), OpenCV

RECENT PUBLICATIONS

- **PULSAR at ImageClef 2023 MediSum: Large Language Models Augmented by Synthetic Dialogue Convert Patient Dialogues to Medical Records:**
 - * Accepted for publication at the **MEDIQA-Sum** track at **CLEF 2023**.
- **Paper: A Robust Section Identification Method for Scanned Electronic Health Records:**
 - * Authors: **Anand Subramanian**, Praveen Kumar Suresh, Sudarsun Santhiappan
 - * Published at the **CODS-COMAD 2023** conference, **Applied Data Science Track**.
- **Paper: Team_BUDDI at ComMA@ICON: Exploring Individual and Joint Modelling Approaches for detecting Aggression, Communal Bias and Gender Bias (Page 13):**
 - * Authors: **Anand Subramanian**, Mukesh Reghu, Sriram Rajkumar
 - * Published at the **ComMA shared task** held as part of **ICON 2021**.
- **Paper: Deep learning for detection and segmentation of artefact and disease instances in gastrointestinal endoscopy:**
 - * Published in the **Medical Image Analysis** journal.
- **Paper: Exploring Deep Learning Based Approaches for Endoscopic Artefact Detection and Segmentation:**
 - * Authors: **Anand Subramanian**, Koushik Srivatsan
 - * Published at the **EndoCV 2020 workshop** held alongside **ISBI 2020**.
- **Paper: Exploring Techniques to Improve Activity Recognition using Human Pose Skeletons:**
 - * Authors: Bharath Raj N., **Anand Subramanian**, Kashyap Ravichandran, N. Venkateswaran
 - * Published at the **HADCV 2020 workshop** held alongside **IEEE WACV 2020**.