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# Devi Prasad Gudala

Newcastle Upon Tyne, UK

Email: [devi.prasad@clini-hub.co.uk](mailto:devi.prasad@clini-hub.co.uk)

LinkedIn: [linkedin.com/in/devi-prasad-9aa988220/](https://www.linkedin.com/in/devi-prasad-9aa988220/)

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## PERSONAL PROFILE

As a dedicated professional with a passion for research in biomedical AI, I bring a unique blend of experiences in ML/DL and clinical data science. My work in this field has allowed me to develop a deep understanding of ML/DL algorithms, predictive modelling, and statistical analysis across diverse data types. Additionally, I have honed my skills in data interpretation, problem-solving, and critical thinking.

During my time as a Clinical Data Scientist, I have been effectively applying these competencies to complex clinical data sets, driving impactful research and fostering innovation. I have a comprehensive understanding of GDPR requirements and continuously undergo training in data protection and security protocols to ensure ethical and secure handling of sensitive patient data.

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## SKILLS

**Languages:** Python, Java, SQL.

**Frameworks/Packages:** NumPy, Pandas, TensorFlow, AWS, Git, Docker.

**Clinical Data Science / Biomedical AI:** Analysis of Toxicology datasets (resulted in statistical platform used by NHS research teams for clinical research), Drug Protein interactions, Neural activity analysis.

**Time-series analysis:** Univariate, Multivariate analysis, explainable AI for LSTM networks, RNN.

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## EDUCATION

**The University of Edinburgh - MSc in Artificial Intelligence - Merit (Distinction in dissertation)**

September 2021 - September 2022

Relevant Courses - Introductory Applied Machine Learning (70%), Machine Learning Practical (Deep Learning) (71%), Advanced Vision (76%), Computational Cognitive Neuroscience (57%), Advanced Database Systems (70%), Advanced NLP (63%).

**Sreenidhi Institute of Science and Technology - BTech in Computer Science - 8.6/10**

August 2017 - September 2021

Relevant Courses - Big Data Analytics, Introduction to Data Science.

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## PROJECTS

**Time series analysis of neural activity (Implications on neurological disorders): (Research project)**

- In this research project, I focused on unravelling the intricacies of the brain's visual cortex (in mice) during the learning process. By analysing neural activity using deep learning techniques, I aimed to shed light on changes occurring within this critical region.
- Algorithms such as Xgboost, MVAR, LSTM, and GRU were applied for time series prediction/classification. Recognizing that machine learning and deep learning models often act as black boxes, I applied SHAP (SHapley Additive exPlanations) technique to provide valuable insights into model predictions.

- Improved upon the existing research by contributing another proof of concept for the study through explainable ML based techniques with potential applications in understanding neurological disorders.

#### **Drug-Target Interaction Prediction: (Research Project)**

- In this research project, I delved into the Binding DB dataset to explore cutting-edge techniques for predicting the affinity between protein and target molecules. Leveraging pre-trained chemical language models such as Protbert and Smiles transformer, I converted proteins and targets into embeddings, experimenting with various models.
- Additionally, I uniquely applied Deep Canonical Correlation Analysis (DCCA) to gain insights into performance changes when compared to similarity-based networks (specifically, Siamese networks) on the dataset.

#### **Improving the robustness of image segmentation tasks: (Research project)**

- In this project, analysis was done regarding perturbations that caused the State-of-the-art segmentation model to break while exploring possible solutions.
- Improved performance of State-of-the-art Deep Lab v3+ model against perturbations such as cutout and Gaussian noise by incorporating attention mechanism and different conv nets.

#### **Limited Data problem: (Analysis project)**

- In this project, the focus was to tackle problems in cases where only a few data points are available.
- To solve such scenarios techniques such as Few-shot learning, meta-learning (Reptile, Prototypical networks), contrastive loss, and image augmentations were implemented for the challenge. It was observed that these proposed techniques improve baseline accuracy by 5-10%.

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## **EXPERIENCE**

### ***Clinical Data Scientist (Clini-Hub Ltd, Newcastle Upon Tyne)***

October 2023 - Present

- Collaborated with Public Health England's toxicology team to design and implement a comprehensive dashboarding system for their extensive dataset. Leveraged data visualization techniques to provide actionable insights and analytics, aiding in informed decision-making.
- Day to day responsibilities include working closely with clinicians to bridge the gap between medical expertise and technical implementation.
- Recent work includes curating and pre-processing clinical data from open sources like MIMIC, specifically for patient deterioration prediction. Additionally, developing robust ML/DL models based on research hypotheses made in collaboration with the clinical team.

### ***Freelance Data Analyst***

October 2022 – October 2023

- **Data Transformation and Cloud Expertise** – As a freelance data analyst, I excelled at transforming raw data into comprehensive datasets. Leveraging cloud-based tools, I efficiently processed and structured data in various formats, ensuring its usability for further analysis.
- **End-to-End Project Management** - My freelance projects encompassed a wide range of responsibilities, from basic data analysis to quality control. Additionally, I authored insightful reports and effectively communicated key findings to cross-functional teams, driving informed decision-making.