



Centre for Al-Fundamentals

RAEng Google DeepMind Summer Internship Programme 2025

Project proposal

Project Title	Machine Learning and the First Galaxies in the Universe		
Lead supervisor	Christopher Conselice		
Project Description	Project Title: Machine Learning for Identifying the First Galaxie in the Universe		
	Project Summary: This project aims to leverage machine learning (ML) techniques to identify and analyse the earliest galaxies in the universe. Using numerical simulations and real astronomical data from the James Webb Space Telescope (JWST), the project will train ML models to detect unique characteristics of high-redshift galaxies. The ultimate goal is to refine our understanding of galaxy formation in the early universe.		
	Detailed work plan (over 7 Weeks):		
	Below describes how the 7 week project will unfold.		
	Week 1: Background Research & Dataset Preparation		
	-Introduction to early galaxy formation and high-redshift astronomy.		
	-Overview of JWST data and numerical simulations. -Gathering and preprocessing simulation datasets.		
	Week 2: Machine Learning Basics & Model Selection		
	-Introduction to ML techniques relevant to astronomy. -Exploration of algorithms such as Convolutional Neural Networks (CNNs) and Random Forests. -Selection of the most suitable approach based on project		
	goals.		
	Week 3: Training on Simulated Data		
	-Preprocessing simulated galaxy data for model training.		



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	-Scientific Research & Critica driven research, analysing da results.	I Thinking: Conducting hypothesis- ata, and interpreting scientific
	This project provides a unique students to engage in cutting of astronomy and artificial in internship, participants will g scientific skills applicable to l	ue opportunity for undergraduate g-edge research at the intersection itelligence. By the end of the gain valuable ML computational and both academia and industry.