Title: A Bandit for All Seasons  
Freelancer Contact: Felix Lawrence <felix@freelancer.com>  
EE Supervisor: A/Prof Craig Jin  
Up to 2 students

At Freelancer.com, we do a lot of A/B testing. We would like to use multi-armed bandits (MABs) so that we can minimise test duration and therefore run more tests and improve our platform faster. However, traditional multi-armed bandits assume that conversion is instantaneous, and that every arm has a fixed probability of converting. For us, neither of these assumptions are true: we sporadically get large quantities of poor traffic from bots, and large quantities of extra-good quality traffic from PR wins; either of these will stuff up the MAB.

You will work with a large data set, and get a chance to create and influence new large data sets from Real Users. You will learn about MABs and contextual MABs, and if none are suited to the problem at hand then you will analyse, refine, implement, and/or extend our simple model that uses Bayesian Inference to run resilient MAB-like experiments.

Title: Predictive modeling to detect fraud  
Freelancer Contact: Arash Sadrieh <asadrieh@freelancer.com>  
EE Supervisor: Prof Philip Leong  
Up to 2 students

Freelancer.com is the world’s leading outsourcing and crowd-sourcing marketplace. We have more than 16 million users from 200 countries that actively use our marketplace and as our marketplace grows, our data grows with it and this is where you come in. To improve the trust and safety of our marketplace, we have created a predictive model to detect fraudulent users using various supervised and semi supervised modelling methods. We would like to optimise our current hybrid model and then deploy the service on to production.

This a fantastic opportunity to learn about unbalanced learning, feature engineering and abnormality detection. You will also encounter to various software engineering best practices we are using to create production ready code. Should your application be successful you will be helping us perform the optimisation of the models and then convert our current prototype version into production ready code. The technologies that you will use are: Python, Scikit-learn, Numpy, scipy

Title: Managing bad actors in a sea of fishy logs  
Freelancer Contact: Nicholas de Jong <ndejong@freelancer.com>  
EE Supervisor: Dr Yash Shrivastava  
Up to 2 students

Freelancer.com is the world’s leading outsourcing and crowd-sourcing marketplace. We have more than 16 million users from 200 countries that actively use our marketplace and as our marketplace grows, our
data grows with it and this is where you come in. We collect logs for all user actions which translates into terabytes of logs every week, we are looking to enhance our situational awareness by detecting event anomalies and bringing this together with data from secondary systems.

Though this project you will:-
- learn about establish systems for processing and accessing large volumes of log files
- learn about log file anomaly feature detection mechanisms
- learn how to integrate detected anomalous events with secondary systems
- learn how to create an interface for interacting with the system

The technologies you will use will be Python, Apache Spark, Amazon Web Services, and modern web frameworks for front end interaction

Title: Algorithmic match making 16 million users to the perfect project
Freelancer Contact: Nathan Dunn <nathan@freelancer.com>
EE Supervisor: Dr Yash Shrivastava
Up to 2 students

Freelancer.com is the world's leading outsourcing and crowd-sourcing marketplace with over 8 million projects posted. Navigating such a vast ocean of opportunity can be overwhelming at times and painstakingly assessing each project on it's individual merits can be a time consuming affair.

Finding the perfect project that best fits a freelancer’s skill level, work history, price / performance profile and marketability to a given employer or project is a difficult task indeed. A task made much easier with technology. Using horizontally scalable machine learning, natural language processing, data mining, and distributed computing techniques you will be offering freelancers projects individually targeted to their very own employment profile. Imagine logging into a website where you are presented with your dream job, over and over, every day. With over 16 million users in 200 countries this is more than just an interesting technical challenge - it is a chance to change people’s lives and transform the way they work all around the world.