

Karolis Jankauskas

A Biochemical Engineer turned Machine Learning Engineer.

Languages Python • Cython • C++ • CUDA • R • Julia • C

Libraries Keras • TensorFlow • Sklearn • SciPy ecosystem • OpenCV • Dlib

Backend Flask • Django

Databases PostgreSQL • RabbitMQ • Redis • Apache

Tools Bash • Git • Docker • AWS • Celery • Jupyter Lab

Platforms Ubuntu • macOS • Windows

Other Deep Learning • CNN • LSTM • Sequence Models

PhD research Scheduling • Evolutionary Programming • Mathematical Programming

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EXPERIENCE



Machine Learning Engineer

Aiden.ai

London, UK, 2018 February – Present

Aiden is a Natural Language Processing (NLP) powered virtual assistant who helps marketers make better decisions.

- Developed and deployed a REST API to detect anomalies in advertising time-series data in real-time.
- Built a multi-task deep neural network-based model with entity embeddings of categorical variables to answer questions such as “What will be the total number of impressions, link clicks, and app installs next week if I spend \$X on ads ABC targeting Y audience in Z location?”.
- Developing a neural network and genetic algorithm-based system for recommending an optimal way to distribute weekly advertising budget to maximise ad sets performance, e.g. impressions, link clicks, and app installs.



Data Scientist

Picasso Labs

London, UK, 2017 Feb – 2018 February

Picasso Labs is recognised as one of Unilever Foundry’s most ambitious and innovative start-ups of the past 5 years.

- Using transfer learning, i.e. a pre-trained Inception v3 CNN, HSV color histograms, and entity embeddings of date, time, and image tags developed a system for recommending images to improve marketing performance on social media.
- Re-used the system above to create a content-based image retrieval engine.
- Built a custom facial expressions recognition model and applied it on over 5000 web-scraped images from US online media to investigate “visual bias”. See www.newsweek.com/liberal-media-not-biased-trump-thinks-703291 and www.picassolabs.com/trump.
- Applied regression and non-parametric statistical tests to determine best performing image categories and segments.



Teaching Assistant

UCL Biochemical Engineering

London, UK, 2016 February – 2018 February

Supervised research projects and taught MSc and MEng students discrete-event simulation, mathematical programming (LP and MILP), evolutionary programming, and multi-objective optimisation.



Consultant

Sphere Fluidics Ltd

Cambridge, UK, 2014 June – 2014 August

Created fluid-flow models of microfluidic chips for a novel single-cell screening and analysis system.



Research Associate

UCL Advanced Centre for Biochemical Engineering

London, UK, 2013 June – 2013 August

Performed multi-variate data analysis on mass spectrometry data to improve the expression of virus-like particles from *Pichia pastoris* cells for a universal influenza vaccine project.

EDUCATION



Udacity

2017 – 2018

Nanodegree, Artificial Intelligence, Certificate of Completion

- Applied Depth-First Search and Constraint-Propagation to solve Sudoku.
- Experimented with Minimax, Alpha-Beta Search, and Iterative Deepening algorithms to create an AI to beat human players in the game of Isolation.
- Using Planning Domain Definition Language (PDDL), A*, and propositional logic developed a solution to find the most efficient route to route air cargo to their respective destinations.
- Using a preprocessed dataset of tracked hand and nose positions extracted from video, trained a set of Hidden Markov Models (HMM) to identify individual sign language words.
- Implemented and applied feed-forward NN, CNN, and RNN on a variety of problems such as classification of over 100 different dog breeds, facial keypoints detection, time-series prediction, and language models.

Some of the projects are available at www.github.com/karolisjan/AIND.



UCL

London, UK, 2014 – 2018

PhD, Biochemical Engineering (Operational Research)

Using Python, Cython, C++14, CUDA, and Docker, developing multi-platform genetic algorithm-based tools for continuous-time multi-objective planning and scheduling of biopharmaceutical facilities with deterministic and stochastic variables.

Accomplishments

- Presented a keynote lecture at the 27th European Symposium on Computer Aided Process Engineering (ESCAPE 27), Barcelona, Spain, 2017.
- Awarded a Year 1 Research Project Prize for Best PhD Project and Poster.



UCL

London, UK, 2010 – 2014

Master of Engineering (MEng), Biochemical Engineering, First-Class Honors

Accomplishments

- Received Jacobs Engineering Design Project Prize.
- Received Head of Department Commendation Award.

Activities

- Fitness instructor at UCLU Muay Thai Club.

PUBLICATIONS & TALKS

Jankauskas, K., Papageorgiou, L.G. and Farid, S.S., 2017. Continuous-Time Heuristic Model for Medium-Term Capacity Planning of a Multi-Suite, Multi-Product Biopharmaceutical Facility. In *Computer Aided Chemical Engineering* (Vol. 40, pp. 1303-1308). Elsevier.

Jankauskas, K., Papageorgiou, L.G., Farid, S.S. 2018. Continuous-Time Heuristic Model for Medium-Term Capacity Planning Of A Multi-Suite, Multi-Product Biopharmaceutical Facility (Keynote), 27th European Symposium on Computer Aided Process Engineering (ESCAPE), Barcelona, Spain, October 2-6.

Jankauskas, K., McCartney, G.R., Osborne, M.D., Papageorgiou, L.G., Farid, S.S. 2017. Multi-Objective Capacity Planning for Multi-Product Biopharmaceutical Facilities Under Uncertainty, 253rd ACS National Meeting, San Francisco, USA, April 2-6.

Jankauskas, K., Papageorgiou, L.G., Farid, S.S. 2016. Production Scheduling of a Multi-Product Biopharmaceutical Facility Using a Genetic Algorithm, 28th European Conference on Operational Research (EURO), Poznan, Poland, July 4-8.

PROJECTS

- www.github.com/karolisjan/BiopharmaScheduling - planning and scheduling of biopharmaceutical facilities
- www.github.com/karolisjan/DeepLearning - a collection of deep learning projects
- www.github.com/karolisjan/Genetic-Programming - AI controllers created with genetic programming