

# Michael Ball

☎ (+49) 163-198-5667 | ✉ michael.h.s.ball@gmail.com | 🏠 mhsb.me | 🌐 | in | 📍 Berlin

## Me

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Machine learning engineer with 3+ years industry experience working at the intersection of software and data science. Previously worked on classical natural language processing and conversational AI; now focused on MLOps, gaze prediction, and generative deep learning. Excels at turning state-of-the-art machine learning experiments into robust, scalable, and exciting products.

## Education

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### Brown University

BSc in Computer Science

Providence, RI, USA

Sep. 2015 - May. 2019

- Graduated with Honours | 3.9/4.0 GPA | awarded senior prize for contribution to machine learning research
- Thesis: "Recursive Intent Propagation using Pretrained Embedding Distances"

## Experience

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### Oculid

Machine Learning Engineer / Engineering Team Lead

Berlin, Germany

Sep. 2019 - Now (1 yr 8 mos)

- Machine Learning DevOps & Infrastructure
  - Designed, implemented, & maintained all of Oculid's production infrastructure (AWS, Terraform, Docker, Sentry, Gitlab CI)
  - Led the company's transition from notebook hacking to serving models in production: data versioning w. DVC, experiment tracking & CI/CD w. MLFlow, serving with Tensorflow-serving, and continuous testing & monitoring with custom tools
  - Achieved 8x speedup in serving predictions through optimisation of model server & refactoring of data preprocessing pipeline
- Machine Learning Experimentation
  - Built the repository used by entire data science team for preprocessing, training, fine-tuning, & evaluation of *all* models
  - Redesigned our image feature extractor using a variety of recent CNN innovations; decreased model error by 9%
  - Oversaw three month research project into edge computing, TFLite, & serving optimized models on mobile devices
- Data Processing
  - Built a GPU scheduling & prioritisation service to optimise data science job management across our in-house hardware stack
  - Built a data pipeline for automated data collection (enabling Oculid to collect the largest gaze prediction dataset in the world)
  - Designed and implemented GDPR processes in line with industry best practices
- Managed software engineering team growth: defined roles, interviewed candidates, distributed tasks, and provided mentorship

### Ambit AI

Machine Learning Researcher

Remote & Auckland, NZ

Jun. 2018 - May. 2019 (1 yr)

- Implemented a SOTA natural language understanding platform (intent-classification, entity extraction, parsing, & state tracking)
- Initiated and oversaw the transition from classical NLP to fine-tuned recurrent neural networks throughout Ambit's product
- Built a multi-stage preprocessing pipeline into existing product architecture; decreased preprocessing error rate by 24%
- Led research into multi-task, continual learning; enabled us to reuse core feature extraction model for multiple downstream tasks

### Nextspace

Software Engineer

Remote & Auckland, NZ

Jun. 2017 - Dec. 2018 (1 yr 6 mos)

- Co-led the team developing a centralised Django backend for low-latency aggregation of messy, large-scale data sources
- Built a network of Django microservices connecting our central server to government infrastructure data sources throughout NZ
- Built an interactive 3D mapping & visualisation platform for the management of Auckland City Council public health infrastructure

### Brown Space Engineering Group

Software Engineer

Providence, RI, USA

Dec. 2016 - Sep. 2017 (9 mo)

- Developed a full-stack Javascript web API to handle transmission & reception satellite data streams, and to visualise results
- Taught a weekly seminar on web development (to provide engineering students with a software development foundation)

## Skills

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**Languages** Python, Tensorflow & TF-serving, Docker(-compose), PostgreSQL, Torch, Django & Celery, JS & React, Bash

**Tools** AWS (RDS, S3, ECS, EC2, SageMaker), Git, Terraform, Sentry, MLFlow, DVC, Jupyter/Colab, Gitlab CI, Tmux