Justin Grace

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EXPERIENCE

Senior Machine Learning Engineer — Jan. 2020 – Present
Healx — *Cambridge, UK*
- Developed & deployed NLP pipeline for processing 35M scientific articles to extract information using named entity recognition, entity linking, relationship extraction.
- Developed & deployed SOTA question answering system for biomedical QA over 35M documents.
- Developed entity linker to link text strings to over 11M biomedical concept entities.

Senior Machine Learning Engineer — Oct. 2018 – Dec. 2019
Unibuddy — *London, UK*
- Developed neural question answering systems to improve interactions on the chat platform.
- Wrote internal library (building on Tensorflow) for solving semantic similarity / paraphrasing using BERT-like models.
- Wrote code for numerous complex NLP architectures from scratch.
- Developed programmatic & crowd-sourced methods for labelling data.

Lead Technologist (Data & Intelligent Systems) — Apr. 2016 – Apr. 2017
Digital Catapult — *London, UK*
- Technical & strategic role developing supporting platforms for industrial AI & machine learning applications. Managed small data science team.
- Developed semantic search engine to discover companies using web-scraped text to speed up partner discovery.

Lead Data Scientist — Feb. 2015 – Apr. 2016
PlayStation / Sony Interactive Entertainment — *London, UK*

Data Scientist — Oct. 2014 – Jan. 2015
the Guardian / Guardian Media Group — *London, UK*

Research Scientist — Oct. 2011 – Oct. 2013
School of Population Health & Environmental Sciences, Kings College London — *London, UK*

Doctoral Research Associate — Sept. 2010 – Oct. 2011
Donders Institute for Brain, Cognition & Behaviour — *Nijmegen, NL*

Research Associate — Sept. 2009 – Sept. 2010
UCL Interaction Centre, University College London — *London, UK*

INITIATIVES & OTHER PROFESSIONAL ACTIVITIES

Miscellaneous — Recent
Various — *NA*
- Public speaking on AI technology at Healx for Rare Disease Conference 2020: Video
- Co-initiated & chaired the Diversity, Equity & Inclusivity working group @ Healx
- Invited speaker at TEDxUCL on data science and ethics: Video

Director — Oct. 2013 – Aug. 2019
Delta Sigma Ltd. — *London, UK*
- Data Science & Statistical consultancy services.
- Technical contributions to 2 successful grant bids with Innovate UK for over £1.5M.
- Invited speaker at TEDxUCL on data science and ethics.

Co-founder & CTO — Mar. 2012 – Aug. 2013
MediCurve Ltd. — *London, UK*
- Spinout initiated by a business competition.

TECHNICAL SKILLS

ML Frameworks & technologies: PyTorch, Tensorflow, Transformers, FAISS
Specialisations & techniques: NLP, Question Answering, Summarization, Named Entity Recognition, Entity Linking/Normalisation, Relationship Extraction
Favourite Libraries: Huggingface, pandas, NumPy, attrs, Spacy, SciKitLearn
Languages & Skills: Python, SQL, Bash, Make, JavaScript, HTML/CSS, R
Developer Tools: Git, Docker, CircleCI, Google Cloud Platform, AWS (batch, ec2, ecr, s3)

Project Showcase

NLP Pipelines | *Software engineering, ML, deployment*   @ Healx
- A new NLP pipeline factory library to enable modular, customizable pipelines to be built & deployed easily.
- Resulting pipeline can arbitrarily scale to as many documents as we like with reasonable costs.
- Incorporates model artifacts for NER, linking & Relation Extraction to construct complex NLP pipelines supporting various model architectures.

Biomedical Question Answering | *SOTA ML, deployment*   @ Healx
- BioBERT fine-tuned on question answering task.
- Incorporated ElasticSearch to shortlist relevant candidate documents.
- Resulting system finds specific answers to complex biomedical questions using 35M documents.

Semantic Search for Company Discovery | *Product-focused, innovation*   @ Digital Catapult
- Product to help the partnership team to discover startups more quickly.
- Web-scraped information about companies & constructed semantic vector-representations.
- Enabled semantic search over the company space to find startups in specific verticals & technologies.

Education

University of Edinburgh   Edinburgh, UK
Master of Science in Artificial Intelligence   *Sep. 2017 – Aug. 2018*
- Thesis: Evaluating latent representations in encoder-decoder models for text summarization with multitask and transfer learning.

Donders Institute of Brain, Cognition & Behaviour   Nijmegen, the Netherlands
Doctor of Philosophy in Cognitive Neuroscience (not completed)   *Sep. 2009 – Aug. 2010*

University of Edinburgh   Edinburgh, UK
Master of Science in Cognitive Neuroscience   *Sep. 2008 – Aug. 2009*

University of Edinburgh   Edinburgh, UK
Master of Arts in Psychology & Linguistics   *Sep. 2004 – Aug. 2008*

Publications

[1] J. Grace. "Evaluating latent representations in encoder-decoder models for text summarization with multitask and transfer learning." M.Sc. Thesis. University of Edinburgh, 2018. URL: https://www.justinjgrace.com/files/s0451365_MSC_THESIS_FINAL.pdf.

[2] A. Douiri et al. "Patient-specific prediction of functional recovery after stroke". In: *International Journal of Stroke* 12 (Apr. 2017). URL: https://www.justinjgrace.com/files/Patient-specific%20prediction%20of%20functional%20recovery%20after%20stroke.pdf.

[3] A. Douiri et al. "A patient-specific prediction instrument using functional recovery curves as a management tool after stroke." In: *Proc. International Conference for Biostatistics* (2014).

[4] J. Grace et al. "A patient-specific predicting tool for functional recovery after stroke." In: *Proc. European Stroke Conference* (2013).

[5] D. Brumby et al. "Fast or safe? how performance objectives determine modality output choices while interacting on the move." In: *Proc. Human factors in computing systems* (2011), pp. 473–482. URL: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.599.2370&rep=rep1&type=pdf.

References

Andrea Pierleoni   Director of AI
Healx (now at Amazon)   *2020*
- Contact details available on request.

Ioannis Karamanlakis   Head of Data Science
Unibuddy   *2018 – 2019*
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Shay Cohen   Reader, Thesis supervisor
University of Edinburgh   *2017 – 2018*
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