PHILIP PRIES HENNINGSEN

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Machine learning engineer specialised in deep learning and computer vision. My background is technical with an intent focus on solving problems related to images and video. I have 4+ years industry experience with designing, developing and delivering machine learning solutions.

WORK EXPERIENCE

Machine Learning Engineer at Criterion AI 2019–present

- **Added human-readable output to business critical blackbox solution.** Developed a semantic segmentation model that augmented images with colors on pixels that explains model classification predictions.
- **Increased performance of data pipeline to almost 150%.** Implemented data pipeline in TensorFlow Datasets instead of Python generators which decreased iteration times and memory footprint.
- **Increased scalability and cost-optimisation.** Using docker, I migrated the entire training flow from Google AI Platform to AWS Sagemaker.

Deep Learning Developer at Veo Technologies 2016–2019

- **Lead the development of the core machine learning functionality in Veos primary product**. Built a production grade pipeline around a fully-convolutional model that outputs a probability map for objects in a highly random environment (soccer matches). This solution is now in production, processing thousands of videos each week.
- **Implemented a 90+% GPU usage training pipeline in TensorFlow.** Working with high resolution video streams required careful consideration of how to maximize GPU usage to reduce costs and iteration times.
- **Developed reporting and visualization tools**. Visualised metrics such as precision / recall / f-score and intersection-over-union in Dash and Plotly. This allowed for insights about data and further optimisation of the solution.
- **Developed a more robust method for creating background segmentation.** By training a neural network to output the motion map based on data created on stable videos, I created a method more resilient to otherwise difficult situations, such as sudden changes in lighting.

Data Scientist at GroupM 2012–2015

- **Part-time** research assistant during my studies and **full-time** data scientist during in the last four months.
- **Replaced manual and error prone data practices with automated data collection and integration.** Used C# in a SSIS pipeline to interface with APIs and collect data to a central data warehouse.
- **Developed data insights prototypes for use in pitches to new clients.** One example was a demonstration using a face recognition framework (Kairos) for gathering real-life analytics data which was used for several pitches and demos.

Research and Development at FindZebra 2013–2014

- Part-time developer while studying.
- Researched and prototyped alternatives to Solr for searching (primarily Latent Dirichlet Allocation).
- Implemented the possibility of applying filter to your search query (namely associated symptoms).

COURSES

Summer school on semi-supervised learning — Aug 2016

- Introductory course on semi-supervised learning, both deep and shallow.
- Arranged as a joint effort between University of Copenhagen and Technical University of Denmark with both external and internal lecturers.

EDUCATION

M.Sc.Eng, Technical University of Denmark — 2013–2015

- Thesis: Applied convolutional and recurrent neural networks on fMRI data and the learning-to-execute problem (learning the output of simple Python programs given as text sequences). Achieved better performance than state of the art on learning-to-execute. *Grade: 12/12*
  Advisors: Ole Winther and Lars Kai Hansen, Cognitive Systems, DTU Compute.
- Project: Trained a convolutional neural network to output the mask necessary to cut out an object from a background. Done in collaboration with CloudCutout (now Spektral). *Grade: 10/12*
  Advisors: Ole Winther, Cognitive Systems, DTU Compute and Toke Jansen Hansen, CloudCutout.

B.Sc.Eng, Technical University of Denmark — 2008–2013

- Thesis: Analyzed open-ended answers to questionnaires using unsupervised topic modeling. Specifically matrix factorization methods such as principal component analysis and non-negative matrix factorization were used to decompose answers represented as a bag-of-words into salient topics. *Grade: 12/12*
- Advisor: Ole Winther, Cognitive Systems, DTU Compute.

TECHNICAL EXPERIENCE

- Programming languages: **Python**, JavaScript, C/C++, C#, MATLAB, SQL and Java
- Frameworks: TensorFlow, SciPy ecosystem (NumPy, scikit-learn, pandas, Matplotlib etc), OpenCV, Plotly and Django
- Other tools: **Git**, **Vim**, **Conda**, **Jupyter Notebook/Lab**, Docker, AWS (Sagemaker in particular), Google Cloud (AI Platform in particular), Heroku
- Operating systems (in order of preference): **macOS**, **linux** (Ubuntu/Debian-like and Arch) and Windows

OTHER INFORMATION

- Nationality: Danish
- Age: 30 years
- Languages: English (full professional proficiency), Danish (native proficiency)