PHILIP PRIES HENNINGSEN

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WORK EXPERIENCE

Machine Learning Researcher at Veo Technologies   2016–present

Using machine learning and computer vision, Veo is a startup set out to create an affordable video solution so millions of soccer players in the world can see their matches and share their goals with friends and family.

- Developed a solution for detecting moving objects and people in a highly random environment (soccer matches). I approached this by setting it up as a frame-by-frame segmentation problem. The solution, which is currently in production, is a TensorFlow based pipeline implementing a fully-convolutional model that outputs a probability map for the different classes (balls & players).

- Implemented a high performance training pipeline in TensorFlow. Using TensorFlow queues and data readers, I developed a training pipeline that is at 90%+ GPU utilization at all times on Nvidia GTX 1080Tis.

- Integrated loading and execution of pre-trained TensorFlow graphs in our production C++ pipeline to enable both rapid prototyping in Python and fast execution at test time in C++.

- Developed a range of reporting tools to give us insight into when and why we are failing, using metrics such as precision / recall / f-score and intersection-over-union. Used Dash by Plotly to create a simple internal dashboard for visualizing the results.

- 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

The largest media company in the world, GroupM acts as the parent company of media agencies such as Maxus, MEC, MediaCom and more.

- Started as Research Assistant during my studies and continued as full-time Data Scientist after graduating.

- Implemented automatic data collection of data from Google Analytics, Facebook, Adform and more. Used C# in a SSIS pipeline to interface with various APIs and save data in the database, which replaced various methods of manually entering data.

- Researched and prototyped methods for collecting and presenting data insights to our client. An example was a demonstration using a face recognition framework (Kairos) for gathering real-life analytics data which was used in several pitches and external demos.

- Streamlined and unified data collection methods used by subsidiaries. I was part of a task force set out to unify how the client companies uses and talks about data, to enable them to use it as effectively as possible.

Research and Development at FindZebra   2013–2014

FindZebra is a tool for helping diagnosis of rare diseases. It uses freely available high quality curated information on rare diseases and open source information retrieval software (Apache Lucene Solr) tailored to the problem.

- 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).

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, Theano, SciPy ecosystem (NumPy, scikit-learn, pandas, Matplotlib etc), OpenCV and Django
- Other tools: Git, Vim, Conda, LaTeX, PyCharm, Heroku, AWS
- Operating systems (in order of preference): macOS, linux (Ubuntu/Debian-like and Arch) and Windows

OTHER INFORMATION

- Nationality: Danish
- Age: 29 years
- Languages: English (full professional proficiency), Danish (native proficiency)