David Biertimpel

Machine Learning/ Computer Vision Engineer

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Interests

I have a passion for machine learning and applications that positively impact society. I love analyzing problems to identify feature representations and inductive biases that improve model performance. I bring excellent skills in computer vision, theoretical machine learning, combined with a strong background in computer science, software development and psychology.

Education

MSc Artificial Intelligence, GPA: 8.53

University of Amsterdam

Sep 2018 – Dec 2020 Amsterdam, Netherlands

- Research Master with a strong focus on the theoretical aspects of machine learning and information theory.
- Mathematically deriving and implementing most major machine learning concepts including Gaussian processes, MCMC, variational inference, GANs, RNNs/LSTMs, GNNs/GCNs, normalizing flows, ICA, among others.
- Implementing applications of different computer vision concepts such as intrinsic image decomposition, epipolar geometry and 3D reconstruction, among others.
- Thesis: Learning Foreground Cues for Novel Objects in Partially Supervised Instance Segmentation @ TomTom

BSc Human Computer Interaction, GPA: 8.1

University of Hamburg

Oct 2014 – Aug 2018 Hamburg, Germany

- Strongly interdisciplinary degree, combining the fields of computer science, psychology and design.
- Focus on human-robot Interaction, biopsychology and creating intuitive interfaces in VR.
- Strong computer science background with focus on software engineering, algorithms & DS and theoretical informatics.
- Thesis: Implementing a deictic gesture interface with the humanoid robot NICO. Final grade: 10.0 – ://github.com/
- Project: Multi-user collaboration in VR. Implementing a network infrastructure with C# and Unity – ://uni-hamburg.de/

Volunteer Experience

Volunteer Coordinator

Grace House CC, Globalteer via GIZ – ://giz.de/en/

Aug 2012 – Jul 2013 Siem Reap, Cambodia

- Participated in the 'weltwärts' programme of the GIZ, a development agency affiliated to the German government.
- Introducing short-term volunteers to the Cambodian culture and supporting them in their daily life.
- Supervising a Cambodian youth group in the evenings.
- Contributing to the Globalteer Sports Program, which organized weekly sports activities in several local NGOs.
- Organizing funding to enable schoolchildren to participate in an annual cycling event.

Work Experience

Machine Learning Research Intern

TomTom – ://tomtom.com/

Jan 2020 – Nov 2020, Full-Time Amsterdam, Netherlands

- Working on instance segmentation with the goal to construct inductive biases that improve generalization to unseen classes.
- Designing, implementing and evaluating computer vision architectures. Efforts resulted in designing OPMask – ://github.com/
- Presenting papers in the weekly object detection reading group.
- Contributing to open-source (Detectron2)
- Experience with PyTorch, OpenCV, Detectron2, Slurm
- References: Sindi Shkodrani and Nóra Baka.

Research Intern

Spinoza Centre for Neuroimaging – ://spinozacentre.nl/

Jun 2019 – Jul 2019, Part-Time Amsterdam, Netherlands

- Analyzing fMRI data from the Human Connectome Project corresponding to naturalistic video sequences to understand connectivity in brain regions.
- Automatically annotating video sequences with object detection architectures such as RetinaNet and Faster R-CNN.
- Experience with PyTorch, NIPY, Pycortex and the Connectome Workbench.

Student Researcher

WISTS Group, University of Hamburg – :// uni-hamburg.de/

Nov 2017 – May 2018, Part-Time Hamburg, Germany

- Design and implementation of a chatbot with Keras, SciPy, and SpaCy.
- Implementing HTTP based infrastructure.

Publications

[1] • David Biertimpel et al. *Prior to Segment: Foreground Cues for Novel Objects in Partially Supervised Instance Segmentation*. 2020. arXiv: 2011.11787 [cs.CV].

[2] • Doreen Jirak et al. *Solving visual object ambiguities when pointing: an unsupervised learning approach*. June 2020. DOI: 10.1007/s00521-020-05109-w.

Skills

Programming:

- Fluent in Python including PyTorch, SciPy, OpenCV, Scikit-learn and Keras
- Further experience in Matlab, Java, C#, C++, Scheme and JavaScript.
- Fluent in different machine learning workflows including data mining, implementing models from scratch and training models on computer clusters.
- Experienced in software engineering and complexity analysis.

Research:

- Excellent skills in academic writing. Experience in the academic process including writing and revising papers.

Languages:

- Native German speaker, proficient in English.