Eddy Ilg

PhD Computer Vision / Deep Learning

Personal Info

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Nationality
German

Degrees

Computer Vision
PhD
University of Freiburg, Germany
Summa Cum Laude

Computer Science
Master of Science
University of Freiburg, Germany
(details on request)

Computer Science
Master of Science
University of Southern California (USC), USA
GPA 3.9 (of 4)

General Engineering Science
Bachelor of Science
Technical University of Hamburg Harburg (TUHH), Germany
(details on request)

Successful researcher who brought real-time and uncertainty to optical flow. Profound software engineering skills and vast experience in realizing projects. Outstanding extra skills from social activities, seeking to leverage collaboration, communication and team leadership at your company.

Work Experience

2019	**Senior Research Scientist at Facebook Reality Labs** (FRL) / Surreal in Redmond, WA, USA. Working on: SLAM, Mapping and Localization, Scene and Object Representation, Neural Rendering
2013 - 2019	Research Scientist at the University of Freiburg under Thomas Brox. Working on: Optical flow, Disparity and Uncertainty Estimation, Future Prediction
2009 - 2013	Freelance work as a software developer, selected projects: • Developing a CAD application in JavaScript within Web-Browsers • Analyzing the business processes for CommitMed • E-Mail, Web- and DNS server administration for dextermedia GmbH (approx. 1500 customers) • Developing an ISDN call-center application for a car dealer • C++ and Linux consulting for iTernity
2011 - 2018	Running a passionate small furniture-making business

Important Publications

ECCV 2018 — **Eddy Ilg***, **Özgün Çiçek***, **Silvio Galesso***, A. Klein, O. Makansi, F. Hutter and Thomas Brox:

Uncertainty Estimates for Optical Flow with Multi-Hypotheses Networks

CVPR 2017 — **Eddy Ilg**, N. Mayer, T. Saikia, M. Keuper, A. Dosovitskiy and Thomas Brox:

FlowNet 2.0: Evolution of Optical Flow Estimation with Deep Networks

ICCV 2015 — **Alexey Dosovitskiy***, **Philipp Fischer***, **Eddy Ilg***, P. Häusser, C. Hazırbaş, V. Golkov, P. Smagt, D. Cremers and Thomas Brox:

FlowNet: Learning Optical Flow with Convolutional Networks

Achievements and Extra Activities

Leading discussions and initiating a team at the University of Freiburg

Acting in musicals and theater

Scholarship from the German Academic Foundation for extermely talented students with a vast horizon

Prize for the best work in software engineering at the German young researcher's contest

Writing an operating system at the age of 15

Research Areas

Major:
Opitical Flow
Disparity
Scene Flow
Uncertainty

Minor:
Depth Estimation
Action Recognition
Motion Segmentation
Super Resolution

AI Skills

Machine Learning
advanced

Computer Vision
advanced

Optical Flow
senior

Robotics
proficient

Software Skills

Writing Project Specifications
advanced

C/C++
senior

Python
senior

Caffe
expert

Tensorflow
proficient

CUDA
advanced

Qt
advanced

Publications in Chronological Order

* denotes equal contributions

ICRA 2014 — **Eddy Ilg**, Rainer Kümmerle, Wolfram Burgard and Thomas Brox:

Reconstruction of Rigid Body Models from Motion Distorted Laser Range Scans Using Optical Flow

ICCV 2015 — **Alexey Dosovitskiy***, **Philipp Fischer***, **Eddy Ilg***, P. Häusser, C. Hazırbaş, V. Golkov, P. Smagt, D. Cremers and Thomas Brox:

FlowNet: Learning Optical Flow with Convolutional Networks

CVPR 2016 — **Nikolaus Mayer***, **Eddy Ilg***, **Philip Häusser***, **Philipp Fischer***, D. Cremers, A. Dosovitskiy and Thomas Brox:

A Large Dataset to Train Convolutional Networks for Disparity, Optical Flow, and Scene Flow Estimation

CVPR 2017 — **Eddy Ilg**, N. Mayer, T. Saikia, M. Keuper, A. Dosovitskiy and Thomas Brox:

FlowNet 2.0: Evolution of Optical Flow Estimation with Deep Networks

CVPR 2017 — **Benjamin Ummenhofer***, **Huizhong Zhou***, J. Uhrig, N. Mayer, Eddy Ilg, A. Dosovitskiy and Thomas Brox:

DeMoN: Depth and Motion Network for Learning Monocular Stereo

GCPR 2017 — **Osama Makansi**, Eddy Ilg and Thomas Brox:

End-to-End Learning of Video Super-Resolution with Motion Compensation

IJCV 2018 — **Nikolaus Mayer**, Eddy Ilg, P. Fischer, C. Hazirbas, D. Cremers, A. Dosovitskiy and Thomas Brox:

What Makes Good Synthetic Training Data for Learning Disparity and Optical Flow Estimation?

ECCV 2018 — **Eddy Ilg***, **Özgün Çiçek***, **Silvio Galesso***, A. Klein, O. Makansi, F. Hutter and Thomas Brox:

Uncertainty Estimates for Optical Flow with Multi-Hypotheses Networks

ECCV 2018 — **Eddy Ilg***, **Tonmoy Saikia*** and Thomas Brox:

Occlusions, Motion and Depth Boundaries with a Generic Network

IJCV 2019 — **Anna Khoreva**, Rodrigo Benenson, Eddy Ilg, Thomas Brox and Bernt Schiele:

Lucid Data Dreaming for Multiple Object Tracking

CVPR 2019 — **Osama Makansi**, Eddy Ilg, Ö. Çiçek and Thomas Brox:

Overcoming Limitations of Mixture Density Networks: A Sampling and Fitting Framework for Multimodal Future Prediction

RA-L 2020 — **Wenxin Liu,** David Caruso, Eddy Ilg, Jing Dong, Anastasios I. Mourikis, Kostas Daniilidis, Vijay Kumar, Jakob Engel:

TLIO: Tight Learned Inertial Odometry

CVPR 2020 — **Rohan Chabra*, Jan Eric Lenssen*,** Eddy Ilg, Tanner Schmidt, Julian Straub, Steven Lovegrove, Richard Newcombe:

Deep Local Shapes: Learning Local SDF Priors for Detailed 3D Reconstruction

Software Skills cont'd

Embedded Systems

expert

Javascript

expert

PHP/MySQL

proficient

Web-Frameworks

proficient

Linux

expert

Windows

proficient

Tutoring

Computer Vision I

Image Processing

GPU Programming

Statistical Pattern Recognition

Fundamentals of AI

Digital Processing Systems

Operating Systems

Computer Science Basics

Theses

Estimating Optical Flow with Convolutional Neural Networks
(PhD thesis)

Optical Flow-Augmented Laser Range Scans of Moving Objects
(Master's thesis)

Automatic Subpixelaccurate Position Recognition
from Images of Commercially Available Rulers
(Master's project)

Evaluation and Optimization of the Migcop Cell and Networking Capabilities
by Implementation of Floating Point Computation Units
(Bachelor's thesis)

Supervision

Master's theses:

2018 Osama Makansi	Augmenting FlowNet with Real-world Training Data
2017 Tonmoy Saikia	Multi Frame FlowNets for Action Recognition
2016 Nikolas Holland	Refining Optical Flow Estimates with Trainable Nonlinear Reaction Diffusion
2016 Janosch Scharlipp	Convolutional Networks for Furneer Classification

Master's projects:

2018 Silvio Galesso	Integrating Uncertainty Estimation for Optical Flow with Convolutional Neural Networks
2018 Zhishang Wang	Evaluation of Different Optical Flow Estimation Methods in Hard Cases
2018 Bandar Al Shareef	Package Segmentation and Fingerprint Matching with Convolutional Neural Networks
2017 Osama Makansi	End-to-end Learning of Video Super-Resolution with Motion Compensation
2016 Tonmoy Saikia	Evaluation of FlowNet for Action Recognition

Bachelor's theses:

2015 Lukas Vögtle	Global and Instance-based Hyperparameter Optimization for Large Displacement Optical Flow

Lab projects:

2014 MaximTatarchenko	Determining Motion Boundaries From Image Boundaries Using Deep Descriptor Matching

Other Social Engagements

Teaching Robotics in 6th an 13th grades
Member of the fraternity „Guilelmia Niedersachsen“ (president in 2012)
Member of the high school inventors club „Heureka“

Hobbies

Musical performances (acting, singing, dancing):

2015	„Finally Freiburg!“ (Endlich Freiburg!) as Rufus (also Max and Leander)
2016	„Urinetown“ (Broadway musical) as Officer Barrel
2017	„Yeast Nation“ (Broadway musical) as part of the ensemble

Theater performances (acting):

2016	„Graf Öderland“ (classical theater from Max Frisch) as father Köhler
2017	„The Skin of Our Teeth“ (modern theater from Thornton Wilder) as Mr. Fitzpatick
2018	„The Green Kakadu“ (grotesque from Arthur Schnitzler) as the Marqui from Lansac

Individual instructions in singing, piano and music theory

Playing basketball to hang out with friends and colleagues

Running Half-Marathon (Freiburg Marathon 2015 through 2018)