# Dr. Florian Jug

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# QUANTITATIVE BIO-DATA COMPUTING

## RESEARCH EXPERIENCE

**FONDATION HUMAN TECHNOPOLE** | RESEARCH GROUP LEADER / FACILITY LEADER
since August 2020 | Milano, Italy

- Quantitative Bio-Image Computing.
- Artificial Intelligence.
- Image Analysis Support.
- Teaching and Community Building.

**CSBD / MPI-CBG** | RESEARCH GROUP LEADER
since Mar 2017 | Center for Systems Biology, Dresden, Germany

- Content-aware Image Restoration (CARE, Cryo-CARE).
- Quantification of cellular processes in light and electron microscopy data.
- Segmentation, tracking, and lineage-tracing in biomedical image data.
- Monitoring single-cell gene regulation under dynamically controllable conditions.

**MPI-CBG** | POSTDOCTORAL RESEARCH
Sep 2012 - Feb 2017 | Myers Lab, Dresden, Germany

- Multi-object tracking and lineage-tracing.
- Quantification of single RNAs in Zebrafish.
- Leveraged Editing for assignment tracker.
- Bacteria tracking in the Mother Machine.
- Dynamic C. elegans atlas and matching.

**ETH ZURICH** | POSTDOCTORAL RESEARCH
Jan 2012 – Aug 2012 | Steger Lab, Zurich, Switzerland

- Heterogeneous but reliable neural systems.
- Wrap-up postdoc.

**ETH ZURICH** | PHD STUDENT
2006 – 2011 | Steger Lab, Zurich, Switzerland

- Theses: On Computation and Learning in Cortical Structures.
- Computational neuroscience.
- Efficient algorithms and graph theory.

**TU MUNICH** | UNDERGRADUATE RESEARCH
2000 – 2006 | Munich, Germany

- Computer Science & Philosophy of Science
- Project: E-Jigsaw
- Development of a prototype for the computer-aided reconstruction of torn Stasi files.
  ( 17.000 bags, each filled with approx. 20.000 paper shavings and hand-torn paper.)

# ADDITIONAL SCIENTIFIC EXPERIENCE

**DEEP LEARNING 4 MICROSCOPY** | Course Director
2019-2020 | Woods Hole, Massachusetts
After a pilot in 2019, we established a dedicated annual 2 week course on deep learning for microscopy image analysis.

**QUANTITATIVE IMAGING COURSE** | Co-organizer of this CSHL Course
2017-2020 | Cold Spring Harbor, New York
Faculty at the prestigious Quantitative Imaging microscopy course. Responsible for teaching topics around data processing and machine learning in the context of microscopy data analysis.

**VISITING SCIENTIST/ COURSE FACULTY** | Physiology Course, MBL
2019 | Woods Hole, Massachusetts
Visiting scientist during the prestigious Physiology Course. We have set up and run an image analysis facility to educate and support the students of the course.

**EMBL CONFERENCE: FROM IMAGES TO KNOWLEDGE WITH IMAGEJ AN FRIENDS** | main organizer
2018 | Heidelberg, Germany
Initiator and organizers of the first edition of the conference I2K held at EMBL Heidelberg. This conference brought 250 people together to discuss the future of bioimage analysis tools: what is needed, how can tools synergize?
(http://www.embl.de/training/events/2018/IMJ18-01/)

**DEEP LEARNING BOOTCAMPS** | organizer
2017-2018 | Dresden, Germany
In this courses we are teaching deep learning with Convolutional Neural Networks (CNN) to PhD students, postdocs, and more advanced researchers. (https://indico.mpi-cbg.de/event/118/).

**BIOIMAGE COMPUTING (BIC) WORKSHOPS** | workshop organizer
2015-2018 | Boston, Amsterdam, Venice, Munich
Organizer of the several BIC workshops at prime computer vision conferences (CVPR,ECCV,ICCV). The purpose BIC is to draw attention of the computer vision experts to data offered by the bio-image community. (http://bioimagecomputing.com)

**VISITING SCIENTIST** | Janelia Research Campus
2014-2016 | Ashburn, Virginia
Visiting scientist on a flybrain atlas project with Eugene Myers and Tzumin Lee.

**PHYSIOLOGY COURSE** | Marine Biology Laboratories (MBL)
summer 2015 | Woods Hole, USA
Full Course Title: Modern Cell Biology Using Microscopic, Biochemical and Computational Approaches
An intensive laboratory course that provides a unique interdisciplinary training environment at the interface between cellular and computational biology.

- Rotation with Jennifer Lippincott-Schwartz (leading to an ASCB poster).
- Rotation with Wallace Marshall (leading to an ASCB poster and a post-course fellowship).
- Rotation with Nicole King.

**COGNITIVE NEUROMORPHIC ENGINEERING WORKSHOP** | workshop lecturer
spring of 2008, 2009, 2010, and 2011 | Capo Caccia, Italy
This workshop provides a forum for international researchers to discuss and explore concepts and methods necessary for advancing neuromorphic systems towards a more cognitive quality of behavior.

# AWARDED GRANTS

**FISS - FIJI SOFTWARE SUSTAINABILITY** | 2017, DFG Grant JU3110/1-1 and TO563/8-1
(2 postdocs, 3 years)
Granted project is ongoing.

**SCADS - SCALABLE DATA SERVICES ON HIGH PERFORMANCE COMPUTING** | 2018, BMBF Grant 01IS18026C
(1 postdocs, 3 years)
Granted project is ongoing.

**DAIS - DRESDEN ANALYSIS-OF-IMAGES SUITE** | 2015, BMBF Grant 031L0102 (1,5 postdocs, 3 years)
Granted project is ongoing.

**ADAPTIVE RELATIONAL NETWORKS: A DETAILED MODEL FOR EFFECTIVE CORTICAL COMPUTATION** | 2012, SNF Grant 200021 143337 (2 PhD, 3 years)
Grant needed to be returned due to my move to MPI-CBG.

**TOWARDS UNDERSTANDING THE BRAIN: SYNTHESIS OF CORTICAL FIELDS AND FACTOR GRAPHS** | 2008, ETH Grant 23 08-1 (2 PhD, 3 years)
Grant used to pay my PhD salary in the research group of Prof. Angelika Steger at ETH Zurich.

## OTHER AWARDS

**TUD YOUNG INVESTIGATOR** | ext. member of CS faculty, including the right to award doctorates.
December 2018 | Dresden

**MBL POST-COURSE FELLOWSHIP** | funded collaboration with Marshall Lab at UCSF.
2015-2016 | Dresden / San Francisco

**MBL SCHOLARSHIP 6377** | received for course participation.
2015 | Woods Hole

**NEUROMORPHIC ENGINEERING TRAVEL GRANT** | invited, fully funded teaching participation.
2013 | Capo Caccia, Italy

## INDUSTRY EXPERIENCE

**EDAG / BMW GROUP** | Software Development (Team Leader)
1999 - 2005 | Munich, Germany
Employed at S+W CA Technik GmbH I worked for a leading automotive supplier called EDAG. I lead a SW development team of up to 4 people for one large (~300.000 LoC) and several smaller software development projects for the BMW Group.

**KET / BMW GROUP** | Software Development
1996 & 1998 | Munich, Germany
Internships as software developer at KET, a supplier for the automotive industry, and BMW AG.

## EDUCATION

**TECHNICAL UNIVERSITY MUNICH (TUM)** | Dipl. Inf. TU
2000 - 2005 | Munich, Germany
Abschluss: mit gutem Erfolg • Average grade: 1.7

**HTL FOR INFORMATION TECHNOLOGY AND MANAGEMENT** | Abitur
1994 - 1999 | Villach, Austria
Abschluss: mit gutem Erfolg • Average grade: 1.9

## LANGUAGE SKILLS

**PROGRAMMING**
Java • Python • C • C++ • C# • Mathematica • Matlab

**DEPLOYMENT**
Maven • Make/Cmake • Jenkins • Gradle

**SPOKEN & WRITTEN**
Native: German
Fluency (C2): English
Level B2: Italian