

Jana Lipková

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Experience

- 2020 – now **Harvard Medical School**, *Brigham and Women's Hospital*, Boston, MA.
Postdoctoral fellow in AI for Pathology Image Analysis Lab
- other affiliations: - Broad Institute of MIT and Harvard
- Cancer Data Science Program, Dana-Farber Cancer Institute
- 2020 – now **NVision | Advisory Board**, *University of Florida*, FL.
- Start-up developing mobile app. to assist glioma patients, image analysis support
- 2021 – now **Harvard Biotech Club**, *Graduate School of Arts and Sciences*, Boston, MA.
classes Biotech Incubator, Innovation and Biodesign Process
- 8-12/2018 **Klinikum Rechts der Isar**, *Neuroradiology*, Munich, DE.
- Software development for personalized radiotherapy planning
- 10 -12/2016 **University of California**, *Mathematics*, Irvine, CA.
9 -12/2014 - Model development for glioma progression and intracranial pressure
- 1/2012–8/2014 **ETH Zürich**, *Computer Science*, CH.
- Research assistant in the Computational Science and Engineering Lab
- 7-9 2009 **Oxford University**, *Mathematics*, Oxford, UK.
- Development of a stochastic algorithm for modeling chemical reactions

Education

- 2015–2019 **Ph.D. in Computer-Aided Medical Procedures**, *Technical University Munich*.
Ph.D. thesis: [Image-based modeling in neuro-oncology](#)
- 2009–2011 **M.S. in Mathematical Modelling in Physics**, *Charles University in Prague*.
- 2006–2009 **B.S. in Mathematics**, *Charles University in Prague*, CR.

Research Projects (selected)

- 2020–now **AI-based Assessment of Endomyocardial Biopsies**.
summary: Interpretable AI-model for assessment of cardiac allograft rejections from H&E stained histopathology biopsy images in post-transplant patients.
Weakly-supervised, multi-label, multi-task, multiple-instance learning model
demo  |  <http://crane.mahmoodlab.org> | <https://github.com/mahmoodlab/CRANE>
- 2021–now **AI framework for multimodal data fusion for survival prediction**.
summary: Weakly-supervised, interpretable framework for multimodal integration of histology, genomics, and radiology data for survival prediction in glioma patients.
- 2020–now **A 3D Printed Embedded AI-based Pathologist**.
summary: A 3D printed microscope with an embedded AI-system for cancer diagnostics.
- 2015–2019 **Personalized radiotherapy design**.
summary: Bayesian ML framework for personalized radiotherapy planning in glioma patients
software: C++ software for tumor modeling, OpenMP + MPI parallelization, adaptive grid refinement
 <http://tdo.sk/~janka/GliomaWebsite/>
- 2019 **Clinical study of CXCR4-PET imaging**.
summary: Investigation of the diagnostic and prognostic potential of CXCR4-directed PET imaging in patients with brain lymphoma
- 2018–2019 **Brain Tumor Segmentation Software**.
summary: Modular software for processing MRI scans of glioma patients. Supports multiple ML algorithms, compatible with BraTS docker library.

tasks: Team leader, project design, algorithm development, prototyping & testing
2017–2018 **Liver Tumor Segmentation Challenge (LiTS)**.
summary: Co-organization of public benchmark for segmentation of liver and lesions in CT scans

Awards & Grants

2020 **Summa cum Laude**, *Ph.D. degree*, Technical University Munich.
2018 **NVIDIA GPU Grant**.
2016 **Bavaria California Technology Center (BaCaTec)**, *Student grant*.
2014,2015 **Best Poster Award - PASC Life Sciences**, *Zürich*, Switzerland.
2011 **Summa cum Laude**, *M.S. degree*, Charles University, Czech Republic.

Professional membership

2021 - 2022 **Computational Pathology ICCV/ECCV**, *Program committee*.
2020 - now **Journal of Neuroimaging**, *Editorial board*.
2018 - now **BrainLes MICCAI**, *Program Committee*.

Teaching & Mentoring

2021 **Teaching assistant**, *Brigham and Women's Hospital*, Boston, MA.
course: AI in pathology
2017–2019 **Lecturer**, *Technical University Munich*, DE.
course: Imaging Neurooncology
2012–2014 **Teaching assistant**, *ETH Zürich*, Switzerland.
courses: Computational Engineering, High Performance Computing for Science & Engineering
2014 **Lecturer**, *CIMST Summer school*, *ETH Zürich*, Switzerland.
2021 – now **Ph.D. Mentor**, *to Ivan Ezhov (TUM)*, DE.
2013 – now **Thesis advisor**, *to Lottie Zhang (Harvard)*, *Christine Eilers (TUM)*, *Christina Frost (TUM)*, *Enes Senel (TUM)*, *Christoph Berger (TUM)*, *Fabian Gura (ETHZ)*, etc.







Programming skills

languages C/C++, Python, Pytorch, Fortran, Pascal, UNIX/BASH, SLURM
parallelisation MPI, OpenMP, OpenACC, CUDA
scientific Matlab, Comsol, Mathematica, QuPath, Ants, Visual Molecular Dynamics, \LaTeX
graphics Blender, ParaView, Volume Perception, ITK-SNAP, MRICroGL

Languages

English (C2), **Slovak (C2)**, **Czech (C2)**, **German (C1)**, **Italian (A1)**

Publications (selected)

-  J. Lipkova, T. Y. Chen, M. Y. Lu, R. J. Chen, M. Shady, M. Williams, et al. Deep learning-enabled assessment of cardiac allograft rejection from endomyocardial biopsies. *Nature medicine*, 28(3):575–582, 2022
-  J. Lipková, B. Menze, B. Wiestler, P. Koumoutsakos, J. S. Lowengrub. Modelling glioma progression, mass effect and intracranial pressure in patient anatomy. *Journal of the Royal Society Interface*, 19(188):20210922, 2022
-  M. Y. Lu, R. Chen, D. Kong, J. Lipkova, R. Singh, T. Chen, et al. Federated learning for computational pathology on gigapixel whole slide images. *Medical image analysis*, 76:102298, 2022
-  M. Y. Lu, T. Y. Chen, D. F. Williamson, M. Zhao, M. Shady, J. Lipkova, F. Mahmood. AI-based pathology predicts origins for cancers of unknown primary. *Nature*, 594(7861):106–110, 2021
-  B. Chen*, M. Y. Lu*, J. Lipkova*, T. Y. Chen, D. F. Williamson, F. Mahmood. A 3D Printed Embedded AI-based Pathologist. *Under revision for Nature Communications* * co-first authors
-  J. Lipkova, P. Angelikopoulos, S. Wu, E. Alberts, B. Wiestler, C. Diehl, et al. Personalized radiotherapy design for glioblastoma: Integrating mathematical tumor models, multimodal scans, and Bayesian inference. *IEEE transactions on medical imaging*, 38(8):1875–1884, 2019

others: [Google Scholar](#)