Philipp Nicholas Matten

PhD Candidate

Hey there! I bring project experience in an international, interdisciplinary environment to the table - experience in industry and an academia included! I am passionate about developing hardware and especially software for medical devices, algorithms, project management, and everything linked to it.

Personal Contact

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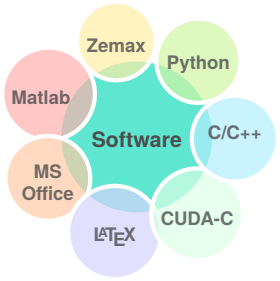
Languages

German ★★★★★★
Mother tongue

English ★★★★★☆
Professional Working Proficiency

French ★★☆☆☆☆
Elementary Proficiency

Programming & Software Skills



Python ★★★★★☆
ML/DL (TF/Keras), CV, GUI-dev.

Matlab ★★★★★☆
GUI-dev. for CV and real-time data display

C/C++ ★★★☆☆☆
CV, OpenCV, Hardware Control

CUDA/C ★★★☆☆☆
GPU-accelerated programming for signal processing and CV

Repositories

GitHub

https://github.com/PhillyVanilly9119

Experience

07/19 - today **Research Associate** — Medical University of Vienna
Early stage researcher at the *Center of Medical Physics and Biomedical Engineering* of the *Medical University of Vienna*. Doctoral research focused on developing 4D OCT applications for novel surgical applications in translational ophthalmology.

12/18 - 07/19 **Masters Student & Research Intern** — Carl Zeiss Meditec AG
Research intern at Carl Zeiss Meditec AG, Oberkochen (Germany), followed by a Master thesis in applied optics (*Department of technical optics (University of Stuttgart)*). Focus of this internship and thesis were the development of novel methods and devices for intraoperative tumor diagnostics, involving CV algorithm development, image processing, GUI development and optics system development for fluorescence-guided neurosurgery.

01/18 - 05/18 **Working Student at Sony STC** — Sony Europe Ltd.
Working student at Sony Europe STC (Stuttgart Technology Center).
Focus during the occupation were data- and image acquisition for facial recognition algorithms.

08/07 - 06/10 **Dual Vocational Trainee** — KODIN GmbH
Dual vocational training as precision mechanic at KODIN GmbH, Gundelsheim (Germany).

Education

2019 - today **PhD - Medical Physics** — Medical University of Vienna
Doctoral studies in the field of **Medical Physics**. Focus of the work lies on intraoperative four-dimensional Optical Coherence Tomography (4D-OCT) and the development of visualization techniques for novel clinical practices in ophthalmology.

2016 - 2019 **MSc - Medical Engineering** — University of Stuttgart
Master's studies in Medical Engineering with areas of specialization in **Signal Processing** and **Optics**. Master's Thesis in **Optics** at the *Institute of Applied Optics (ITO), Uni Stuttgart* - in cooperation with Carl Zeiss Meditec AG, Oberkochen (Germany).

2012 - 2016 **BSc - Medical Engineering** — Universities of Tübingen and Stuttgart
Bachelor's studies in medical engineering with specializations in **Precision Engineering** and **Radiation Sources for Medical Physics**. Bachelor's Thesis in **Biophysics** at the *Institute of Biomaterials and Biomolecular Systems* (Department of Biophysics).

2010 - 2012 **Allgemeine Hochschulreife (equivalent to A level)** — Technische Oberschule Stuttgart
Leistungskurse (Advanced Courses): Physics, English, German and Mathematics.

08/07 - 06/10 **Dual Vocational Trainee** — KODIN GmbH
Dual vocational training as precision mechanic at KODIN GmbH, Gundelsheim (Germany).

Activities & Memberships

2019 - today **ARVO member** — ARVO
Member of the Association for Research and Vision in Ophthalmology *(ARVO)*

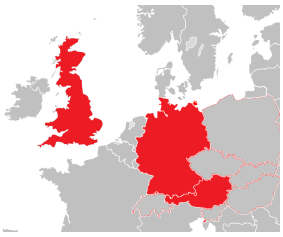
2019 - today **Member of the SPIE/Optica Student Chapter** — SPIE/Optica Optical Student Chapter
Past President of the SPIE/Optica Student Chapter of the **CMPBME** (2019-2021).

2020 - today **SPIE & OSA member** — SPIE & Optica
Member of the international society for optics and photonics *(SPIE)* and optical society *(Optica)*.

2020 - today **Young Scientist Association (YSA)** — YSA - Medical University of Vienna
Member & past Vice-President of the Young Scientist Association of the Medical University of Vienna. Helped organize the **17th YSA PhD Symposium** including event management, key note speaker acquisition and session moderation. Organized and hosted **YSA Winter Colloquium** on Machine Learning in Medical Science.

Personal Skills

Places lived



List of Co-authorships

ARVO Journals (Online Library)

https://iovs.arvojournals.org/solr/searchresults.aspx?author=Philipp+Matten

SPIE (Digital Library)

https://www.spiedigitallibrary.org/profile/notfound?author=Philipp_Matten

Activity as a Reviewer/Referee

Optica Publishing Group (since 2020)

Journal Publications

2023 **Manuscript (curr. last round of revisions)** Scientific Reports
P. Matten et al., "Multiple instance learning based classification of diabetic retinopathy in weakly-labeled widefield OCTA en face images", TBD (Special Issue "Machine learning applications in medical image analysis"

2023 **Manuscript** Biomedical Optics Express (BOE)
A. Britten & P. Matten et al., "Surgical microscope integrated MHz SS-OCT with live volumetric visualization", Biomed. Opt. Express 14, 846-865 (2023). doi:https://doi.org/10.1364/BOE.477386

2022 **Manuscript** TVST (an ARVO Journal)
M. Wuest & P. Matten et al., "Thickness of the Protective Layers of Different Ophthalmic Viscosurgical Devices During Lens Surgery in a Porcine Model", Translational Vision Science & Technology February 2022, Vol.11, 28. doi:https://doi.org/10.1167/tvst.11.2.28

Conference Proceedings

2023 **Conference Presentation (Oral)** Photonics West BiOS 2023
P. Matten et al., "Robust classification of diabetic retinopathy from small, weakly labeled OCTA datasets using multiple instance learning", SPIE BiOS - Session XXVII (12367-70)

2021 **Conference Presentation (Oral)** Photonics West BiOS 2021
P. Matten et al., "Automatic pipeline for segmentation of the anterior segment in porcine eyes using optical coherence tomography", SPIE BiOS - Ophthalmic Technologies XXXI (11623).

2020 **Conference Presentation (Oral) & Abstract** ARVO Imaging in the Eye
P. Matten et al., "A clinical MHz swept-source OCT prototype for ultra-widefield imaging", Investigative Ophthalmology & Visual Science July 2020, Vol.61

Supervised Student Theses & Projects

2023 **Master's thesis** Technical University of Vienna & Medical University of Vienna
B. Lee - "Improvement of classification of diabetic retinopathy using weakly-labeled multi-channel attention in multiple instance learning" (work in progress)

2023 **Master's thesis** Technical University of Vienna & Medical University of Vienna
F. Kapeller - "Stereoscopic Visualization of real-time Intraoperative 4D-miOCT in Ophthalmology"

2022 **Master's thesis** University of Stuttgart & Medical University of Vienna
J. Scherer - "Entwicklung einer automatischen Pathologieerkennung mittels Machine Learning auf Basis von klinischen Rohdaten der Optischen Kohärenztomographie" (Germ. orig. title, thesis written in English)" - "Development of automatic pathology detection using machine learning based on raw clinical optical coherence tomography data" (English transl. of title)

2021 **Research thesis** Munich University of Applied Sciences & Medical University of Vienna
M. Wuest - "Evaluation and comparison of homogeneity of the protective impact of Ophthalmic Viscosurgical Devices (OVDs) using Optical Coherence Tomography (OCT)"

2020 **Bachelor's thesis** Aalen University & Medical University of Vienna
M. Wuest - "Analyse der Schutzschichtbildung durch ophthalmologische Viskoelastika am Endothel in Schweineaugen mithilfe der Optischen Kohärenztomographie" (German orig. title) - "Analysis of protective layer formation by ophthalmic viscoelastics on the endothelium in porcine eyes using Optical Coherence Tomography" (English transl.).

Vienna, *May 10, 2023*

Philipp Matten