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Swiss citizen  
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## VITA

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- 2017 - *curr*      Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland  
PhD student at the Biomedical Imaging Group (BIG)  
*Project (working title):*    Nonlinear inverse problems in optics  
*Advisors:*                    Prof. Michael Unser and Dr. Emmanuel Soubies
- 2015 - 2016      University of Iowa in Iowa City, Iowa, USA  
Master Project in Prof. Jacob group  
*Project:*                    Reconstruction of subcellular structure using  
                                     super-resolution localization microscopy  
*Advisors:*                  Prof. Mathews Jacob and Prof. Michael Unser
- 2013 - 2016      Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland  
**MSc in Bioengineering** with Minor in **Neuroprosthetics**
- 2015                Advanced Digital Science Center (ADSC), Singapore  
Industry intern
- 2010 - 2013      Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland  
**BSc in Life Sciences and Technologies**

## RESEARCH INTEREST

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- Computational imaging**    Inverse problems in imaging  
   *Physical model: wave propagation, optics*  
   *Regularization-based reconstruction algorithms*
- Machine learning**            Deep learning for image reconstruction  
   *Supervised and unsupervised learning, untrained neural networks*

## PUBLICATIONS

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*Journal:*

1. T. Hong\*, **T.-a. Pham\***, E. Treister, and M. Unser, “Diffraction tomography with Helmholtz equation: Efficient and robust multigrid based solver,” 2021, under review
2. **T.-a. Pham**, E. Soubies, F. Soulez, and M. Unser, “Optical diffraction tomography from single-molecule localization microscopy,” 2021, under review
3. F. Yang, **T.-a. Pham**, N. Brandenburg, M. P. Lutolf, J. Ma, and M. Unser, “Robust phase unwrapping via deep image prior for quantitative phase imaging,” 2020, under review. [*Link: <https://arxiv.org/abs/2009.11554>*]

4. J. Griffie, **T.-a. Pham**, C. Sieben, R. Lang, V. Cevher, S. Holden, M. Unser, S. Manley, and D. Sage, “Virtual-SMLM, a virtual environment for real-time interactive SMLM acquisition,” 2020, under review. [Link: <https://www.biorxiv.org/content/10.1101/2020.03.05.967893v1>]
5. F. Yang, **T.-a. Pham**, H. Gupta, M. Unser, and J. Ma, “Deep-learning projector for optical diffraction tomography,” *Optics Express*, vol. 28, no. 3, pp. 3905–3921, February 3, 2020
6. A. Ayoub, **T.-a. Pham**, J. Lim, M. Unser, and D. Psaltis, “A method for assessing the fidelity of optical diffraction tomography reconstruction methods using structured illumination,” *Optics Communications*, vol. 454, no. 124486, pp. 1–6, January 1, 2020
7. **T.-a. Pham**, E. Soubies, A. Ayoub, J. Lim, D. Psaltis, and M. Unser, “Three-dimensional optical diffraction tomography with Lippmann-Schwinger model,” *IEEE Transactions on Computational Imaging*, vol. 6, pp. 727–738, 2020
8. E. Soubies, F. Soulez, M. McCann, **T.-a. Pham**, L. Donati, T. Debarre, D. Sage, and M. Unser, “Pocket guide to solve inverse problems with GlobalBioIm,” *Inverse Problems*, vol. 35, no. 10, pp. 1–20, October 2019, paper no. 104006
9. D. Sage\*, **T.-a. Pham\***, H. Babcock, T. Lukes, T. Pengo, J. Chao, R. Velmurugan, A. Herbert, A. Agrawal, S. Colabrese, A. Wheeler, A. Archetti, B. Rieger, R. Ober, G. Hagen, J.-B. Sibarita, J. Ries, R. Henriques, M. Unser, and S. Holden\*, “Super-resolution fight club: Assessment of 2D and 3D single-molecule localization microscopy software,” *Nature Methods—Techniques for Life Scientists and Chemists*, vol. 16, no. 5, pp. 387–395, May 2019
10. **T.-a. Pham**, E. Soubies, A. Goy, J. Lim, F. Soulez, D. Psaltis, and M. Unser, “Versatile reconstruction framework for diffraction tomography with intensity measurements and multiple scattering,” *Optics Express*, vol. 26, no. 3, pp. 2749–2763, February 5, 2018
11. E. Soubies\*, **T.-a. Pham\***, and M. Unser, “Efficient inversion of multiple-scattering model for optical diffraction tomography,” *Optics Express*, vol. 25, no. 8, pp. 21 786–21 800, September 4, 2017

\*: Equal contributions

*Conference, symposium and workshops:*

1. **T.-a. Pham**, E. Soubies, F. Soulez, and M. Unser, “Diffraction tomography from single-molecule localization microscopy: Numerical feasibility,” in *Proceedings of the Eighteenth IEEE International Symposium on Biomedical Imaging (ISBI’21)*, Nice, French Republic, April 13–16, 2021, pp. 854–857, **Best student paper award**
2. Q. Denoyelle, **T.-a. Pham**, P. del Aguila Pla, D. Sage, and M. Unser, “Optimal-transport-based metric for SMLM,” in *Proceedings of the Eighteenth IEEE International Symposium on Biomedical Imaging (ISBI’21)*, Nice, French Republic, April 13–16, 2021, pp. 797–801
3. **T.-a. Pham**, E. Soubies, A. Ayoub, D. Psaltis, and M. Unser, “Adaptive regularization for three-dimensional optical diffraction tomography,” in *Proceedings of the Seventeenth IEEE International Symposium on Biomedical Imaging (ISBI’20)*, Iowa City IA, USA, April 5–7, 2020, pp. 182–186, [nominated for best paper award]
4. **T.-a. Pham**, E. Soubies, D. Sage, and M. Unser, “Closed-form expression of the Fourier ring-correlation for single-molecule localization microscopy,” in *Proceedings of the Sixteenth IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI’19)*, Venice, Italian Republic, April 8–11, 2019, pp. 321–324, **Best student paper award**
5. **T.-a. Pham**, E. Soubies, J. Lim, A. Goy, F. Soulez, D. Psaltis, and M. Unser, “Phaseless diffraction tomography with regularized beam propagation,” in *Proceedings of the Fifteenth IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI’18)*, Washington DC, USA, April 4–7, 2018, pp. 1268–1271

6. L. Donati, E. Soubies, **T.-a. Pham**, and M. Unser, “User-friendly building of reconstruction algorithms for solving inverse problems,” in *Proceedings of the Seventeenth IEEE International Symposium on Biomedical Imaging (ISBI’20)*, Iowa City IA, USA, April 5-7, 2020, p. 1307
7. **T.-a. Pham**, N. Brandenburg, S. Hoenel, B. Rappaz, M. Unser, M. Lütolf, and D. Sage, “Quantitative image-analysis of organoids with high-throughput digital holography microscopy,” in *Proceedings of the 2020 Quantitative BioImaging Conference (QBI’20)*, Oxford, United Kingdom, January 6-9, 2020, paper no. 365
8. D. Sage, **T.-a. Pham**, and M. Unser, “3D single molecule localization microscopy: Key outcomes of the software benchmarking,” in *Proceedings of the Sixteenth IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI’19)*, Venice, Italian Republic, April 8-11, 2019, p. 610
9. **T.-a. Pham**, D. Sage, and S. Holden, “Developments of the ongoing 3D SMLM software challenge,” in *Seventh Single Molecule Localization Microscopy Symposium (SMLMS’17)*, London, United Kingdom, August 30-September 1, 2017

## AWARDS

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2021	<b>Best student paper</b> ISBI award (2nd prize)
2019	<b>Best student paper</b> ISBI award (runner-up)

## REVIEW ACTIVITIES

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Optica  
 Optics Express  
 Journal of the Optical Society of America A  
 Optics Letters  
 Transactions on Computational Imaging  
 Transactions on Microwave Theory and Techniques  
 Nature Methods  
 Nature Communications

## TEACHING

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2017 - <i>Curr</i>	Swiss Federal Institute of Technology in Lausanne (EPFL), Lausanne Teaching assistant for Image Processing I and II Head teaching assistant (2017-2020)
2012 - 2015	Swiss Federal Institute of Technology in Lausanne (EPFL), Lausanne Teaching assistant (student) Physics I, II and Analysis I, II & IV for Life Science and Technologies section (SV).

### *Supervised students:*

2021	Paul Margain <i>Internship:</i> High-resolution reconstruction in single-particle cryo-EM with a multi-scale joint refinement scheme
2021	Mickael Gindroz <i>Semester project:</i> Differentiable Approximation of Hessian-Schatten Regularization for Image Reconstruction

- 2021 Aiday Marlen  
*Semester project:* Using regularization to reduce the number of projection angles in optical projection tomography
- 2020 Paul Margain  
*Semester project:* Deep learning for 3D particle field imaging
- 2020 Louis-Nicolas Douce  
*Semester project:* Slice-based Dictionary Learning for Computed Tomography
- 2020 Mohamed Bahroun  
*Semester project:* Image reconstruction for optical diffraction tomography
- 2019 Jérôme Savary  
*Semester project:* Phase Unwrapping with Deep Learning
- 2019 Elias Gajo  
*Semester project:* An off-the-grid algorithm in ImageJ for 3D single-molecule localization microscopy (bis)
- 2019 Amandine Evard  
*Semester project:* An off-the-grid algorithm in ImageJ for 3D single-molecule localization microscopy
- 2019 Luca Fetz  
*Semester project:* Timing correction for slow-scanning biomedical imaging devices
- 2019 Clélie De Witasse  
*Semester project:* Dictionary Learning for Limited Angle Computed Tomography
- 2018 Cédric Schumacher  
*Semester project:* Improving depth-of-field by deconvolution

## LANGUAGES

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French : Native  
English : Fluent  
German : B2 level

## PERSONAL

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I play piano (somewhat guitar), love music improvisation (at my own level)  
Occasional reader/watcher of science-fiction books/movie  
Willing to try new food cuisines  
Biking and soccer (under mild conditions)