

# AXEL LEVY

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**Research Interests:** Imaging, Machine Learning, Inverse Problems, 3D Reconstruction

## EDUCATION

<b>Stanford University</b> PhD in Electrical Engineering (2020 – Now) <ul style="list-style-type: none"><li><i>Solving Unknown-View Tomography with End-to-End Differentiable Computing</i></li><li>Supervised by Pr. Gordon Wetzstein (EE, Stanford) and Pr. Mike Dunne (Applied Physics, SLAC)</li></ul>	Stanford, CA
<b>Ecole Polytechnique</b> MS in Theoretical Physics, Engineering Diploma (2017 – 2021)	Palaiseau, France
<b>Ecole Sainte-Genevieve</b> Preparatory School in Maths, Physics and Engineering Sciences (2015 – 2017)	Versailles, France

## PUBLICATIONS

<b>MELON: NeRF with Unposed Images Using Equivalence Class Estimation</b> <i>Levy* A., Matthews* M., Sela M., Wetzstein G., Lagun D.</i> arXiv preprint	2023
<b>GeNVS: Generative Novel View Synthesis with 3D-Aware Diffusion Models</b> <i>Chan E.*, Nagano K.*, Chan M.*, Bergman A.*, Park J.J.*, Levy A., Aittala M., De Mello S., Karras T., Wetzstein G.</i> arXiv preprint	2023
<b>Amortized Inference for Heterogeneous Reconstruction in Cryo-EM</b> <i>Levy A., Wetzstein G., Martel J., Poitevin F., Zhong E.</i> NeurIPS	2022
<b>Heterogeneous reconstruction of deformable atomic models in Cryo-EM</b> <i>Nashed Y., Peck A., Martel J., Levy A., Koo B., Wetzstein G., Miolane N., Ratner D., Poitevin F.</i> NeurIPS Workshops	2022
<b>CryoAI: Amortized Inference of Poses for Ab Initio Reconstruction of 3D Molecular Volumes from Real Cryo-EM Images</b> <i>Levy A., Poitevin F., Martel J., Nashed Y., Peck A., Miolane N., Dunne M., Wetzstein G.</i> ECCV	2022
<b>Advances in Deep Generative Modeling for Molecular Reconstruction in Cryo-Electron Microscopy</b> <i>Donnat C., Levy A., Poitevin F., Miolane N.</i> Journal of Structural Biology	2022
<b>Voltage-controlled superparamagnetic ensembles for low-power reservoir computing</b> <i>Welbourne A., Levy A. L. R., Ellis M. O. A., Chen H., Thompson M. J., Vasilaki E., Allwood D. A., Hayward T. J.</i> Applied Physics Letters	2021

## TALKS

📄 <b>SLAC Public Lecture</b> (SLAC)	2023
📄 <b>Amortized Inference for Cryo-EM</b> (Princeton & Flatiron Institute)	2022
📄 <b>Machine Learning at SLAC – AI Seminar</b> (Stanford)	2022
📄 <b>PIMS - Mathematical and Computational Challenges in Cryo-EM</b> (UBC)	2022
📄 <b>4th International Symposium on Cryo-3D Image Analysis</b> (Tahoe)	2022

## AWARDS AND FELLOWSHIPS

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- **Pacific Institute for the Mathematical Sciences Travel Award** 2022
- **SGF: Stanford Graduate Fellowship in Engineering** 2020 - 2021
- **French Academy of Sciences Prize** (awarded for scientific work at the Ecole polytechnique) 2021
- **Best PSC Prize** (awarded to 3 scientific group projects out of 120) 2020

## WORK EXPERIENCE

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- Google - Student Researcher** Jun 2022 - Sep 2022  
Mountain View, California
- Supervised by Dmitry Lagun in the SynthX team
  - Inverse rendering: training a NeRF without the poses
- Stereolabs - Optoelectronic Engineering Intern** Jun 2019 - Aug 2019  
Paris, France
- Improved the electrical and mechanical design of 3D stereo-cameras
  - Worked in an IT start-up of 15 people
- Officer in the Air Force on a Military Base in New Caledonia** 2018  
Noumea, New Caledonia
- Headed a section of 28 teenagers and strengthened my ability to lead

## TEACHING EXPERIENCE

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- Course Assistant - Semiconductor Memory Devices and Circuit Design**  
*Instructor: Prof. Philip Wong (Stanford University)*
- Teaching Assistant in Preparatory School**  
*Ecole Sainte-Genevieve*
- Coached a class to a nationwide competitive exam and evaluated students

## SKILLS

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**Languages:** English (fluent), French (native), Spanish (intermediate)  
**Programming:** Python, Pytorch, Jax, Tensorflow, C++, Java, Git

## EXTRACURRICULARS

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**Sports:** Surfing, volley-ball, climbing, hiking  
**Cinema:** President of the Ecole polytechnique's film society, directed several short-films