

# AXEL LEVY

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## EDUCATION

<b>Stanford University</b> Ph.D. Electrical Engineering <ul style="list-style-type: none"><li>Efficient Machine Learning Algorithms for Protein Structure Determination with Cryo-EM</li><li>Areas: machine learning, protein structure determination, 3D reconstruction, generative models</li></ul>	2020 - 2025
<b>Ecole Polytechnique</b> Grandes Ecoles Program / Ingénieur Polytechnicien <ul style="list-style-type: none"><li>Areas: statistical mechanics, quantum physics</li></ul>	2017 - 2020
<b>Lycée Sainte-Genevieve</b> MP - PSI* <ul style="list-style-type: none"><li>Areas: maths, physics, engineering sciences</li></ul>	2015 - 2017

## RESEARCH AND WORK EXPERIENCE

<b>Generate:biomedicines - Machine Learning Research Scientist</b> Somerville, Massachusetts <ul style="list-style-type: none"><li>Research in Artificial Intelligence (AI) for drug discovery</li></ul>	2025 - Present
<b>Generate:biomedicines - Machine Learning Intern</b> Somerville, Massachusetts <ul style="list-style-type: none"><li>De novo protein generation with diffusion models, structure determination</li><li>Advisor: Dr. John Ingraham, Dr. Eugene Palovcak, Dr. Maxwell Zimmerman</li></ul>	Jun 2024 - Sep 2024
<b>Google Brain - Research Scientist Intern</b> Mountain View, California <ul style="list-style-type: none"><li>Inverse rendering, neural rendering</li><li>Advisor: Dr. Dmitry Lagun (SynthX team)</li></ul>	Jun 2022 - Sep 2022
<b>SLAC National Lab + Stanford Computational Imaging Lab</b> Stanford, California <ul style="list-style-type: none"><li>Advisors: Prof. Mike Dunne (LCLS), Prof. Gordon Wetzstein (SCI)</li></ul>	2021 - 2025
<b>University of Sheffield - Visiting Researcher</b> Sheffield, UK (remote) <ul style="list-style-type: none"><li>Reservoir computing, neuromorphic computing, quantum materials</li><li>Advisor: Prof. Tom Hayward, Dr. Alex Welbourne</li></ul>	Mar 2020 - Jul 2020
<b>ONERA - The French Aerospace Lab</b> Palaiseau, France <ul style="list-style-type: none"><li>Random matrices theory, diffusion theory</li><li>Advisors: Dr. Jean-Philippe Ovarlez, Dr. Eugenie Terreaux</li></ul>	Sep 2019 - Mar 2020
<b>Polytechnique Scientific Group Project</b> Palaiseau, France <ul style="list-style-type: none"><li>Built a quantum remote laboratory in a group of 5 students</li><li><a href="https://fentes-young-photon-exp.binets.fr/index.php">https://fentes-young-photon-exp.binets.fr/index.php</a></li><li>Advisors: Prof. Emmanuel Joffre, Prof. Daniel Suchet</li></ul>	Sep 2018 - Jun 2019
<b>Stereolabs - Optoelectronic Engineering Intern</b> Paris, France <ul style="list-style-type: none"><li>3D stereo-imaging, optics, electronics</li><li>Start-up of 15 people</li><li>Advisor: Dr. Edwin Azzar</li></ul>	Jun 2019 - Aug 2019
<b>Air Force Officer</b> Noumea, New Caledonia	2018

## PUBLICATIONS

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- CryoDRGN-AI: Neural *Ab Initio* Reconstruction of Challenging Cryo-EM and Cryo-ET Datasets** 2025  
*Levy A., Raghu R., Feathers R., Grzadkowski M., Poitevin F., Johnston J., Vallese F., Clarke O., Wetzstein G., Zhong E.*  
Nature Methods - [link](#)
- Multiscale Guidance of AlphaFold3 with Heterogeneous Cryo-EM Data (CryoBoltz)** 2025  
*Raghu R., Levy A., Wetzstein G., Zhong E.*  
NeurIPS - [link](#)
- Scalable 3D Reconstruction for X-Ray Single Particle Imaging Based on Online Machine Learning** 2025  
*Shenoy J., Levy A., Ayyer K., Poitevin F., Wetzstein G.*  
Nature Communications
- Mixture of Neural Fields for Heterogeneous Reconstruction in Cryo-EM** 2024  
*Levy A., Raghu R., Shustin D., Peng A., Li H., Clarke O., Wetzstein G., Zhong E.*  
NeurIPS - [link](#)
- Towards Interpretable Cryo-EM: Disentangling Latent Spaces of Molecular Conformations** 2024  
*Klindt D., Hyvärinen A., Levy A., Miolane N., Poitevin F.*  
Frontiers in Molecular Biosciences - [link](#)
- MELON: NeRF with Unposed Images in SO(3)** 2023  
*Levy A.\*, Matthews M.\*, Sela M., Wetzstein G., Lagun D.*  
3DV Spotlight - [link](#)
- GeNVS: Generative Novel View Synthesis with 3D-Aware Diffusion Models** 2023  
*Chan E.\*, Nagano K.\*, Chan M.\*, Bergman A.\*, Park J.J.\*, Levy A., Aittala M., De Mello S., Karras T., Wetzstein G.*  
ICCV Oral - [link](#)
- Amortized Inference for Heterogeneous Reconstruction in Cryo-EM** 2022  
*Levy A., Wetzstein G., Martel J., Poitevin F., Zhong E.*  
NeurIPS - [link](#)
- Heterogeneous reconstruction of deformable atomic models in Cryo-EM** 2022  
*Nashed Y., Peck A., Martel J., Levy A., Koo B., Wetzstein G., Miolane N., Ratner D., Poitevin F.*  
NeurIPS Workshops - [link](#)
- CryoAI: Amortized Inference of Poses for *Ab Initio* Reconstruction of 3D Molecular Volumes from Real Cryo-EM Images** 2022  
*Levy A., Poitevin F., Martel J., Nashed Y., Peck A., Miolane N., Dunne M., Wetzstein G.*  
ECCV - [link](#)
- Deep Generative Modeling for Volume Reconstruction in Cryo-Electron Microscopy** 2022  
*Donnat C., Levy A., Poitevin F., Zhong E., Miolane N.*  
Journal of Structural Biology - [link](#)
- Voltage-controlled superparamagnetic ensembles for low-power reservoir computing** 2021  
*Welbourne A., Levy A., Ellis M., Chen H., Thompson M., Vasilaki E., Allwood D., Hayward T.*  
Applied Physics Letters - [link](#)

## TALKS

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- PhD Defense** (Stanford University, Stanford) recorded 2025
- Guest Lecture** (*Laura Waller*, UC Berkeley, Berkeley) 2024
- SLAC Users' Meeting** (SLAC, Menlo Park) 2024
- Guest Lecture** (*Gordon Wetzstein*, Stanford University, Stanford) 2024
- SCIEN Seminar** (Stanford University, Stanford) recorded 2023
- CECAM Workshop** (EPFL, Lausanne) 2023

<b>Invited Talk</b> ( <i>Slavica Jonic</i> , IMPMC, Paris)	2023
<b>Invited Talk</b> ( <i>Michael Unser</i> , EPFL, Lausanne)	2023
<b>Invited Talk</b> ( <i>George Drettakis</i> , INRIA, Sophia-Antipolis)	2023
<b>Invited Talk</b> (Google, Mountain View)	2023
<b>Invited Talk</b> ( <i>Vincent Sitzmann</i> , MIT, Cambridge)	2023
<b>SLAC Public Lecture</b> (SLAC, Menlo Park) <i>recorded</i>	2023
<b>Invited Talk</b> ( <i>Ellen Zhong</i> , Princeton University, Princeton)	2022
<b>Invited Talk</b> ( <i>Pilar Cossio</i> , Flatiron Institute, NYC)	2022
<b>Invited Talk</b> ( <i>Sylvain Gigan</i> , ENS, Paris)	2022
<b>SLAC AI Seminar</b> (SLAC, Menlo Park)	2022
<b>PIMS Workshop</b> (UBC, Vancouver)	2022
<b>4th International Symposium on Cryo-3D Image Analysis</b> (Tahoe)	2022

## AWARDS AND FELLOWSHIPS

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<b>Google Conference Scholarship</b>	2024
<b>Pacific Institute for the Mathematical Sciences Travel Award</b>	2022
<b>SGF: Stanford Graduate Fellowship in Engineering</b>	2020
<b>French Academy of Sciences Prize</b> (awarded for scientific work at Ecole Polytechnique)	2021
<b>Best Scientific Group Project Prize</b> (awarded to 3 groups out of 120)	2020

## ACADEMIC SERVICE

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Reviewer, European Conference on Computer Vision (ECCV)	2024
Reviewer, Neural Information Processing System (NeurIPS)	2023, 2024, 2025
Reviewer, NeurIPS Workshop on Machine Learning for Structural Biology (MLSB)	2023, 2024
Reviewer, International Conference on Computer Vision (ICCV)	2023
Reviewer, Conference on Computer Vision and Pattern Recognition (CVPR)	2022, 2024
Reviewer, PLOS Computational Biology	2022

## TEACHING EXPERIENCE

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<b>Course Assistant - Computational Imaging</b>	2023 - 2024
<i>Instructor: Pr. Gordon Wetzstein (Stanford University)</i>	
<b>Course Assistant - Semiconductor Memory Devices and Circuit Design</b>	2020
<i>Instructor: Pr. Philip Wong (Stanford University)</i>	
<b>Teaching Assistant in Preparatory School - Physics</b>	2018 - 2019
<i>Instructor: Pr. Thibaud Naulet (Ecole Sainte-Genevieve)</i>	
<ul style="list-style-type: none"> <li>Prepared students for a nationwide ranked exam (X/ENS/Centrale/Mines)</li> </ul>	

## SOFTWARE

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<b>ADP-3D:</b> <a href="https://github.com/axel-levy/axlevy-adp-3d">https://github.com/axel-levy/axlevy-adp-3d</a>	2024
<b>DRGN-AI:</b> <a href="https://github.com/ml-struct-bio/drgnai">https://github.com/ml-struct-bio/drgnai</a>	2024
<b>CryoFIRE:</b> <a href="https://github.com/ml-struct-bio/cryofire">https://github.com/ml-struct-bio/cryofire</a>	2022
<b>CryoAI:</b> <a href="https://github.com/compSPI/cryoAI">https://github.com/compSPI/cryoAI</a>	2022

## SKILLS

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