

THOMAS DAGÈS

Haifa, Israel

✉ thomas.dages@cs.technion.ac.il

July, 2024

EDUCATION

Technion, Faculty of Computer Science

PhD candidate - Towards Neural Network Interpretability

Advisors: Alfred Bruckstein and Michael Lindenbaum

2020 – Today

Haifa, Israel

Technion, Faculty of Computer Science

MSc - Spatio-Temporal Salient Detection of Moving Objects in Highly Degraded Video Data

Advisors: Alfred Bruckstein and Michael Lindenbaum

2017 – 2019

Haifa, Israel

École Polytechnique

Engineering degree (MSc equivalent) specialised in Mathematics and Computer Science

2014 – 2017

Palaiseau, France

Lycée Louis-Le-Grand

Intensive preparatory classes for competitive entrance examinations to the French Grandes Écoles

2012 – 2014

Paris, France

PUBLICATIONS

- Amit Bracha*, **Thomas Dagès***, and Ron Kimmel. “Wormhole Loss for Partial Shape Matching”, *preprint currently unavailable* (2024), *under review*.
- **Thomas Dagès**, Michael Lindenbaum, and Alfred M. Bruckstein. “Metric Convolutions: A Unifying Theory to Adaptive Convolutions”, *arXiv preprint arXiv:2406.05400* (2024), *under review*.
- Simon Weber*, **Thomas Dagès***, Maolin Gao, and Daneil Cremers. “Finsler Laplace-Beltrami Operator for Shape Correspondence”, *Computer Vision and Pattern Recognition (CVPR) conference* (2024).
- Amit Bracha, **Thomas Dagès**, and Ron Kimmel. “On Partial Shape Correspondence and Functional Maps”, *arXiv preprint arXiv:2310.14692* (2024), *under review*.
- **Thomas Dagès**, Michael Lindenbaum, and Alfred M. Bruckstein. “From Compass and Ruler to Convolution and Nonlinearity: On the Surprising Difficulty of Understanding a Simple CNN Solving a Simple Geometric Estimation Task”, *arXiv preprint arXiv:2303.06638* (2023), *under review*.
- **Thomas Dagès**, Laurent D. Cohen, and Alfred M. Bruckstein. “A Model is Worth Tens of Thousands of Examples.” *Scale Space and Variational Methods in Computer Vision (SSVM) conference* (2023).
- **Thomas Dagès** and Alfred M. Bruckstein. “Doubly Stochastic Pairwise Interactions for Agreement and Alignment.” *SIAM Journal on Applied Mathematics* 82.4 (2022): 1246-1266.
- Ariel Barel, **Thomas Dagès**, Rotem Manor, and Alfred M. Bruckstein. “Probabilistic gathering of agents with simple sensors.” *SIAM Journal on Applied Mathematics* 81.2 (2021): 620-640.
- **Thomas Dagès** and Alfred M. Bruckstein. “A Bound on the Edge-Flipping Distance between Triangulations (Revisiting the Proof).” *arXiv preprint arXiv:2106.14408* (2021).
- **Thomas Dagès**, Michael Lindenbaum, and Alfred M. Bruckstein. “Seeing Things in Random-Dot Videos.” *MSc Thesis. Computer Science Department, Technion* (2020).
- **Thomas Dagès**, Michael Lindenbaum, and Alfred M. Bruckstein. “Seeing Things in Random-Dot Videos.” *Asian Conference on Pattern Recognition. Springer, Cham* (2019).

SUPERVISION EXPERIENCE

- Automated Saffron Detection and Extraction for a Factory Line** 2021 - Today
• Undergraduate and MSc project.
- Revisiting Multi-Dimensional Scaling** 2024 - Today
• MSc project.

TEACHING EXPERIENCE

- 236201 - Introduction to Data Processing and Representation** 2021 - Today
• Head Teaching Assistant.
• Creating and teaching entirely new material, homeworks, and exams and correcting the latter.
- 236200 - Signal, Image, and Data Processing** 2019 - 2021
• Cohead Teaching Assistant.
• Teaching with mostly existing material, creating and correcting new homeworks and exams.
- 236861 - Geometric Computer Vision** 2019
• Homework Checker.

RESEARCH SIDE PROJECTS

- Technion** 2018
Student Research Project Haifa, Israel
• Created a state-of-the-art astronomical image deblurring algorithm by applying an approach using sparse representations.
- École Polytechnique – Université Paris Descartes** 2016 – 2017
Student Research Project Palaiseau, France
• Created and implemented an emotion detector on human faces with a webcam by using the active shape model and fuzzy logic.
- Dassault systèmes** 2017
Research Intern Vélizy, France
• In the context of 3D city modelling based on ground photographs, created and implemented an occlusion and reflection remover on the reconstructed texture with automatic detection and inpainting.
- Renault Technologies Romania** 2016
Computer-Aided Engineering Intern Bucharest, Romania
• Numerically modelled and simulated the problems of exaggerated opening and closing of a car bonnet maintained by a prop rod, for replacing the costly hydraulic cylinders on the Renault Kaptur.

RESEARCH INTERESTS

- | | | | |
|-------------------------------|------------------------------|---|------------------------------------|
| • Computer Vision | • Modelling Human Vision | • Interpretable Artificial Intelligence | • Planar and Differential Geometry |
| • Signal and Image Processing | • Classical Machine Learning | • Abstract and Applied Mathematics | • Statistics |
| • Image Analysis | | | • Applied Computer Science |

LANGUAGES

Computer: Python, Matlab, C++, Java, OCaml

Human: English (bilingual), French (bilingual), German (intermediate), Russian (beginner), Hebrew (beginner)

EXTRACURRICULAR

- | | |
|--|--|
| • Sports, often with a group: horse riding, bouldering, surfing. | • Soothing manual activities like baking, calligraphy, and letter sealing. |
| • Thought provoking Sci-fi reading/viewing and discussions. | • Unplugging through gaming and outings with friends. |