Thomas Dagès

Haifa, Israel
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EXPERIENCE

Technion, Faculty of Computer Science **2025 – Today**
Postdoc *Haifa, Israel*
Hosts: Alfred M. Bruckstein, Michael Lindenbaum, and Ron Kimmel

EDUCATION

Technion, Faculty of Computer Science **2020 – 2024**
PhD - Geo-Metric Learning and the Value of Models *Haifa, Israel*
Advisors: Alfred M. Bruckstein and Michael Lindenbaum

Technion, Faculty of Computer Science **2017 – 2019**
MSc - Spatio-Temporal Salient Detection of Moving Objects in Highly Degraded Video Data *Haifa, Israel*
Advisors: Alfred M. Bruckstein and Michael Lindenbaum

École Polytechnique **2014 – 2017**
Engineering degree (MSc equivalent) specialised in Mathematics and Computer Science *Palaiseau, France*

Lycée Louis-Le-Grand **2012 – 2014**
Intensive preparatory classes for competitive entrance examinations to the French Grandes Écoles *Paris, France*

PUBLICATIONS

- **Thomas Dagès***, Simon Weber*, Ya-Wei Eileen Lin, Ronen Talmon, Daniel Cremers, Michael Lindenbaum, Alfred M. Bruckstein, and Ron Kimmel. "Finsler Multi-Dimensional Scaling: Manifold Learning for Asymmetric Dimensionality Reduction and Embedding", *Computer Vision and Pattern Recognition (CVPR) conference* (2025).

- Amit Bracha*, **Thomas Dagès***, and Ron Kimmel. "Wormhole Loss for Partial Shape Matching", *Neural information processing systems (NeurIPS) conference* (2024).

- Amit Bracha, **Thomas Dagès**, and Ron Kimmel. "On Unsupervised Partial Shape Correspondence", *Asian Conference on Computer Vision (ACCV) conference* (2024).

- **Thomas Dagès**, Laurent D. Cohen, and Alfred M. Bruckstein. "A model is worth tens of thousands of examples for estimation and thousands for classification." *Pattern Recognition journal* (2024).

- **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 Daniel Cremers. "Finsler Laplace-Beltrami Operator for Shape Correspondence", *Computer Vision and Pattern Recognition (CVPR) conference* (2024).

- **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 photographies, 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
- Signal and Image Processing
- Image Analysis
- Modelling Human Vision
- Classical Machine Learning
- Interpretable Artificial Intelligence
- Abstract and Applied Mathematics
- Planar and Differential Geometry
- Statistics
- 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.
- Thought provoking Sci-fi reading/viewing and discussions.
- Soothing manual activities like baking, calligraphy, and letter sealing.
- Unplugging through gaming and outings with friends.