

# THOMAS DAGÈS

Haifa, Israel

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February, 2024

## EDUCATION

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### 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* Paris, France

2012 – 2014

## PUBLICATIONS

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- Amit Bracha, **Thomas Dagès**, and Ron Kimmel. “On Partial Shape Correspondence and Functional Maps”, *arXiv preprint arxiv:2310.14692* (2023).
- **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).
- **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

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### Automated Saffron Detection and Extraction for a Factory Line

2021 - Today

- Undergraduate project.

## TEACHING EXPERIENCE

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### 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 PROJECTS

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### 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

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

## LANGUAGES

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

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

## EXTRACURRICULAR

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| • 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.                      |