



# Sara Samy

## curriculum vitae

### Education

- 2025 - current **Mathematics M.Sc.**, *Technische Universität Berlin*, Berlin, Germany
- 2017 - 2025 **Technomathematics B.Sc.**, *Technische Universität Berlin*, Berlin, Germany  
Bachelor's thesis: *Circular sections of quadrics*. Supervised by Prof. Alexander I. Bobenko and Dr. Jan Techter.
- 2009 - 2014 **Chemical Engineering**, *Alexandria University*, Alexandria, Egypt  
Area of Specialization: *Petrochemical Engineering*.
- 2007 - 2009 **Thanaweya Amma**, *École Saint Vincent*, Alexandria, Egypt

### Experience

- 2024 **MIT SGI Fellow**, *Summer Geometry Initiative*, Massachusetts Institute of Technology, U.S.  
An intensive six-week summer research program in geometry processing.
- Developed output-sensitive collision detection for deformable models.
  - Implemented a global intersection analysis technique to resolve self-collision in cloth simulations.
  - Implemented an automatic sketch colorization method using winding number features on tori.
  - Analyzed algorithms for constructing solid surfaces from signed distance data (SDFs).
- 2021 - 2024 **Research assistant**, *Discretization in Geometry and Dynamics, SFB Transregio 109*, Technische Universität Berlin, Germany.
- Contributed to the development of *pyddg*, a python library for discrete differential geometry and visualization in Blender.
  - Produced mathematical animations for the movie *Solving the Bonnet problem* by Ekaterina Ee and Prof. Alexander I. Bobenko.
  - Led a team of students to create visualizations for *Geometry I-II* lecture notes, taught by Prof. Boris Springborn at TU Berlin.
- 2010 - 2015 **Visual artist**  
*Selected exhibitions:*
- Optimized textures (2015), Kestner Gesellschaft Hannover, Germany.
  - Cairo and Berlin (2015), Joint project of Goethe-Institut & German Embassy in Cairo, Egypt.
  - Was tust du, Objekt? (2015), Gypsum Gallery, Cairo, Egypt.
  - Profit | Prophet (2014), St. Johannes Church, Berlin Art Week, Germany.
  - New Aesthetics (2013), National Center for Contemporary Art, Yekaterinburg, Russia.
  - DVD Dead Drop (2013), Museum of the Moving Image, New York City, U.S.
- 2012 **Artist assistant**, *dOCUMENTA (13)*, Kassel, Germany
- Provided administrative, technical and installation assistance to various artists during the quinquennial contemporary art exhibition Documenta 13.

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- 2010 - 2012 **Newspaper Editor & Photographer**, *Akhbar el-Yom*, Alexandria, Egypt
- Edited grammatical, stylistic, and content errors of article submissions in Arabic.
  - Gathered and verified information through interviews, research and photography.

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## Languages

Arabic Mother tongue  
English Fluent  
German C1 (CEFR)

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## Other Skills

### Programming

Python, TypeScript, Wolfram Language

### Machine Learning Frameworks

PyTorch

### Software

Blender, Houdini, Adobe Creative Suite, Zbrush

### Tools

Git,  $\LaTeX$ , Nix, Vi/Vim