(Mark) Shui Hu

Applied Physics Graduate
Python developer
Tinkerer

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Hi, my name is Mark. I am attentive to detail and well organized, and always aim to furfill a target without compromises. I am always eager to learn, use, and produce innovative tools to tackle complex problems that are both tangible and easy to use, and I love to share that knowledge with others.
In my free time, I enjoy playing games online, working out, and the feeling after a run. I spend more time making automations for my smart home than the time that is saved by these automations. And what time that remains is spend on browsing for new shows to watch but always ends with a rewatch of my favorite shows.

Languages

Native	
Fluent	

Skills

Proficient	Python, MATLAB, laTeX,
Competent	SQL, CI/CD, Bash, Adobe Creative Suite, Autodesk Fusion & CFD
Beginner	HTML, CSS, Javascriptt

EDUCATION

Master Applied Physics *Delft University of Technology* **2017 - 2020**
Electives on fluid dynamics, imaging physics, and quantum mechanics. Master thesis on quantum error correction at QuTech; development and benchmarking of a new decoder for the surface code via a self-produced quantum simulator in Python.

Bachelor Applied Physics *Delft University of Technology* **2013 - 2017**
Bachelor thesis on imaging and biophysics; description and further development of a software package for analysis of protein movement during DNA replication in E. Coli with MATLAB.

Medical Delta *Erasmus University Rotterdam, Leiden University* **2015 - 2016**
Minor program in medicin. Includes courses on anatomy, biophysical processes, and radiology.

Gymnasium *Lorentz Casimir Lyceum* **2007 - 2013**
Curriculum: science & engineering and science & health + German & French.

EXPERIENCE

Student assistant *QuTech Academy, Delft* **2018 - 2020**
Preparation, testing and moderation of various online courses about quantum computation by QuTech on edX.

Flow engineer intern *Spirocco Kft., Budapest* **2018 - 2019**
Design, simulation and testing of volume-flow meters within a proposed smart-asthma-inhaler. Prototyping workflow included using Autodesk Fusion for CAD modelling, Autodesk CFD for flow simulation, and 3D printing.

Online content manager *Bever BV, Pijnacker* **2018**
Management of online stock using propriatory software. The process wasn't efficient, which led to the development of Python software for pre-parsing inventory lists for easier management and increased productivity.

Highschool student tutor *iLoveHomework, The Hague* **2014 - 2018**
Homework guidance and tutoring on the subjects of physics, mathematics, chemistry, and biology.

Software engineer intern *PinkRF, Nijmegen* **2016**
Development of software for 3D volume reconstructing from stereometric images for a protype microwave devices using MATLAB.

AWARDS

Unitary Fund *Non-profit microgrant program* **2020**

To further develop Qsurface, a simulator package for surface codes. The grant will improve visualization methods and facilitate the collaboration of an open, modular platform for surface code simulations.

Singapore International Matchematics Challenge *NUS Highschool* **2012**

Distinction (second) award and presentation award for the 2012 SIMC challenge.

PUBLICATIONS

Quasilinear-Time Decoding Algorithm for Topological Codes with High Decoding Performance

S. Hu and D. Elkouss, *Arxiv preprint* **TBA**

Quasilinear Time Decoding Algorithm for Topological Codes with High Error Threshold

S. Hu and D. Elkouss, *Master thesis,* 10.13140/RG.2.2.13495.96162 **2020**

User-friendly analysis of fluorescent spot position of bacterial proteins using a microfluidic device and agarose pads

S. Hu and R. de Leeuw, *Bachelor thesis,* 10.13140/RG.2.2.34615.55205 **2017**

PROJECTS

Qsurface *https://github.com/watermarkhu/qsurface* **2020**

Python package for simulation and visualization of quantum error-correction on surface codes, including the ability to inspect the error-correcting code during the decoding process, and tools to benchmark the decoder.

ACTIVITIES

Volunteer & participant First Lego League *Benelux, Germany, Denmark, Norway, Japan* **2006 - present**

As participant: Winner of FLLOEC Norway 2007 and robot design in FLLOAC Japan 2008. As volunteer: Judging and organization for the regional, national, or international finals of the First Lego League competition in the Netherlands and Germany.

Freshman's weekend committee *Vereniging voor Technische Physica (VvTP)* **2017**

Presidential role in organizing the freshman weekend activity for 300+ students

Study tour committee *VvTP* **2015 - 2016**

Graphic design, communication, and planning role in organizing a 30-day study tour to South-East Asia and China.

Various committees *VvTP, AEGEE Delft, Lorentz Casimir Lyceum* **2012 - 2015**

Various roles including organizer of symposia, editor and graphic designer for the faculty magazine and yearbook, and IT related committees