

# Saqib Javed

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## CONTACT INFORMATION

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## EDUCATION

**ETH - Zürich**, Switzerland [www.iis.ee.ethz.ch](http://www.iis.ee.ethz.ch)  
*M.Sc. Electrical Engineering* (Research abroad) Sep, 2020 - Present  
• **Thesis :** HW-Friendly Mixed-Precision N-Networks for Object Detection  
**Supervisors :** [Prof. Dr. Luca Benini](#) [Prof. Dr.-Ing. Walter Stechele](#)

**Technical University of Munich**, Germany [www.tum.de](http://www.tum.de)  
*M.Sc. Communications Engineering* | CGPA: 1.4/1.0 (3rd in class) Oct, 2017 - Present  
• **Thesis :** HW-Friendly Mixed-Precision N-Networks for Object Detection [transcript](#)  
**Supervisors:** [Prof. Dr. Luca Benini](#) [Prof. Dr.-Ing. Walter Stechele](#)

**National University of Sciences & Technology (NUST)**, Pakistan [www.nust.edu.pk](http://www.nust.edu.pk)  
*B.Sc. Electrical Engineering* | CGPA: 3.59/4.00 Sep, 2013 - June, 2017  
• **Thesis:** "Obstacle Detection and Avoidance for the Visually Impaired" [transcript](#)  
**Supervisors:** [Dr. Khawar Khurshid](#)

## PUBLICATIONS

J. Kunze, V. Mayer, L. Thiergart, **S. Javed**, P. Scheppe, T. Tran, M. Haug, M. Avezum, B. Bruegge, Eugne C. Ezin. "Towards SWARM: A Smart Water Monitoring System" *IEEE ICPS*, Finland, June 2020 [SWARM](#)

## PROFESSIONAL EXPERIENCE

**Max Planck Institute | Extraterrestrial Physics**, Germany <https://www.mpe.mpg.de/mai>  
*Research Intern | Deep learning on FPGA* April, 2020 - August, 2020  
• Enhancing framerate of camera by using chess mode of high speed image sensors and feeding the readed data stream into deep neural network for performing pixel interpolation on FPGA.  
**Supervisors:** [Dr.-Ing. Markus Plattner](#) [Dr.-Ing. Sabine Ott](#)

**BMW Group / TUM | Autonomous Driving Campus**, Germany [bmwgroup.com](http://bmwgroup.com)  
*Research Intern | HW/SW Optimization of Convolutional N-Networks* July - December, 2019  
• Implemented an innovative method to optimize CNNs and reduce power and memory footprint of machine learning models.  
**Supervisors:** [Prof. Dr.-Ing. Walter Stechele](#) [Msc. Nael Fafous](#)

**GE-Healthcare**, Germany [gehealthcare.com](http://gehealthcare.com)  
*Intern | Software Test Engineering - Automation* March - June, 2019  
• Software development and testing of GE-Healthcare's product "Seno Iris" which is used for examining images from Mammography.

**Siemens AG | CT RDA IOT SES-DE**, Germany [new.siemens.com](http://new.siemens.com)  
*Research Intern | Deep learning and Model Deployment* October - December, 2018  
• Implementation of algorithms in the area of machine learning, image processing and distributed systems to automate laser welding process, configurable by Web APIs.  
• Supported the implementation of demonstrator for collaborative embedded systems.

**Intel | Application debugger.**, Germany [intel.com](http://intel.com)  
*Working Student | Softwar Development* March - August, 2018  
• Development and testing of tools for software developers to support application debugger functions on next-generation company hardware platforms using C and C++.

## INTERNATIONAL EXPERIENCE

**Ferienakademie | Autonomous Drones for Sustainability**, Italy [ferienakademie.de](http://ferienakademie.de)  
*Summer School* September - October, 2019  
• Did research under the supervision of [Prof. Dr. Bernd Brügge](#) to introduce a smart water monitoring system which is centered around unmanned aerial vehicles (UAVs).

TUTORSHIP	<p><b>TUM   Chair of Electronic Design Automation</b>, Germany <a href="http://eda.ei.tum.de">eda.ei.tum.de</a>  <b>VHDL System Design Laboratory</b> November 2019 - July, 2020</p> <ul style="list-style-type: none"> <li>Guided students for two semesters to understand and solve lab tasks in implementing AES encryption algorithm on FPGA. <b>VHDL Lab</b></li> </ul> <p><b>Supervisors:</b> <u>Dr.-Ing. M.Eng. Li Zhang</u></p>
SKILLS & COMPETENCIES	<p><b>Languages:</b> C/ C++*, Python*, VHDL, C#, Assembly</p> <p><b>Libraries:</b> Keras*, Tensorflow*, PyTorch*, OpenCV, Numpy*, Scipy, Matplotlib*, Pandas, scikit-learn</p> <p><b>Software/Frameworks:</b> Flask, MATLAB/ Simulink*, Unix/ Bash, Docker, Selenium <math>\text{\LaTeX}</math>*</p> <p><b>Version Control:</b> Git    <b>IDEs:</b> PyCharm*    * denotes higher proficiency</p>
LANGUAGES	English, German, Urdu
PROJECTS (SELECTED)	<p><b>Reducing Carbon Emissions based on Policy Decisions post COVID-19</b> Apr - Sep, 2020</p> <ul style="list-style-type: none"> <li>Developed a tool for policy makers, scientists and other researchers to analyze different policies and their impact on the CO2 emissions.</li> </ul> <p><b>Supervisors:</b> <u>Prof. Dr.-Ing. Klaus Diepold</u> <a href="#">repository</a></p> <p><b>Obstacle Detection and Avoidance for Visually Impaired</b> September, 2016 - June, 2017</p> <ul style="list-style-type: none"> <li>Developed a complete prototype made for Visually impaired people to freely navigate in an indoor environment using sensor fusion technique.</li> </ul> <p><b>Supervisors:</b> <u>Dr. Khawar Khurshid</u> <a href="#">repository</a></p> <p><b>Semantic Segmentation via Reduced FCNNs</b> October, 2018 - January, 2019</p> <ul style="list-style-type: none"> <li>Casting classification networks (VGG16 &amp; LeNet) into fully convolutional segmentation networks and retraining with 88.01% px-wise cross-val. accuracy &amp; 0.81 IoU (pytorch &amp; MSRC dataset).</li> <li>75% model reduction ( 500 MB <math>\rightarrow</math> 85 MB) via iterative filter pruning (based on <math>l_1</math> norm) and retraining with 83.61% px-wise accuracy &amp; 0.74 IoU.</li> </ul> <p><b>Supervisors:</b> <u>Dr. Yiyu Shi</u> <a href="#">repository</a></p> <p><b>Securing MQTT Protocol using AES-GCM</b> February, 2018 - July, 2018</p> <ul style="list-style-type: none"> <li>Implemented AES-GCM encryption algorithm to secure MQTT Protocol Communication between Broker and Subscriber. <a href="#">repository</a></li> </ul> <p><b>FPGA Implementation of IDEA Algorithm</b> April, 2018 - June, 2018</p> <ul style="list-style-type: none"> <li>Implementation of IDEA algorithm on the Spartan-3E FPGA using VHDL.</li> </ul>
VOLUNTEER EXPERIENCE & COMMUNITY SERVICE	<p><b>NUST-Student Government Association (SGA)</b>, NUST-SEECS <a href="https://facebook.com/SEECS.SGA">facebook.com/SEECS.SGA</a>  <i>Head of Events, Sports Society</i> September, 2015 - September, 2016</p> <ul style="list-style-type: none"> <li>Supervised team of 10 people to manage the events for each sports during the whole year.</li> </ul> <p><b>ACM Mentorship Program</b>, NUST-SEECS <a href="http://www.acm.org/">www.acm.org/</a>  <i>Project Mentor</i> February, 2017 - June, 2017</p> <ul style="list-style-type: none"> <li>Helped students in Data Structures and Algorithm course and guided them to come up with good project ideas.</li> </ul>
HONORS & AWARDS	<ul style="list-style-type: none"> <li><i>Recipient</i>, <u>International research stays scholarship for computer scientists (DAAD- IFI)</u>, 2020.</li> <li><i>Top 50 candidates</i>, <u>9<sup>th</sup> National Chemistry Talent Contest(NCTC)</u>, Pakistan , 2012.</li> <li><i>76<sup>th</sup>/8533 Position</i>, <u>International KANGAROO Mathematics Contest (IKMC)</u>, Pakistan, 2008.</li> <li><i>2<sup>nd</sup> Position in Class</i>, <u>Intermediate (HSSC)</u>, IMCB - F-7/3, 2013.</li> <li><i>Recipient</i>, <u>NUST Academic Merit Scholarship</u>, 2013 - 2017.</li> <li><i>Winner</i>, <u>Federal Board Table Tennis Tournament</u>, Pakistan, 2012.</li> <li><i>Best player</i>, <u>BEE-5 Intra-batch Sports Tournament</u>, NUST-SEECS, 2015</li> <li><i>Captain</i>, <u>Table Tennis Team</u>, Nust-SEECS, 2016 - 2017</li> <li><i>Winner</i>, <u>National Table Tennis Tournament</u>, Fast-Islamabad, Pakistan, 2016 - 2017</li> </ul>