**Personal Introduction**

First Name: Given Name: Forename:MuhammadLast Name: Family Name: Surname:Ali

Muhammad Ali  
Electrical Engineer  
Electrical and Electronics Engineer  
Electronics Engineer  
Date of Birth: 30th November 1998

**CNIC**: 42401-6161925-9  
Issue Date: 23-08-2017  
Expire Date: 23-08-2027

**Finnish RP**:  
Personal identity code/ Social Security number: 301198-033K  
Customer Number: 3184631  
Miscellaneous Number: FI4363713  
Validity: 15-08-2023 --> 15-09-2025  
Validity: 15/08/2023 --> 15/09/2025  
Right to work: 30 hours/week  
OPISKELIJA 2016/801/EU (OPISKELIJA: student)  
National Learner ID (not on card): 1.2.246.562.24.85934676664

**New Passport** Number: QZ1819252  
Issue Date: 20-05-2022  
Expire Date: 18-05-2032  
Issuing Authority: Government of Pakistan  
  
Old Passport Number: QZ1819251  
Issue Date: 29-08-2016  
Expire Date: 28-08-2021  
  
**French CVEC:**   
N° INE : 223423181CD  
Crous Montpellier-Occitanie

• **Self-introduction video:**  
<https://bit.ly/4eoD8nC>

• **Portfolio:**  
<https://mmali.netlify.app/>  
  
• **Sample research project:**  
<https://youtu.be/aDtnSoSor4E>  
  
• **Sample research proposal:**  
<https://bit.ly/4eqw61I>  
  
• **Sample practical work**<https://youtu.be/NtWT8aEdATg>  
  
• **Supporting documents:**   
<https://bit.ly/3TqzoK4>

**New IELTS:**Test Date: 28-11-2022  
Centre Number: PK015  
Candidate Number: 017090  
Candidate ID: 42401-6161925-9  
Test Report Form Number: 22PK017090ALIM015A  
Reference: A3-PK015-S-8677494  
CEFR level: C1

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| Total: 7.5 | Listening :8.5 | Reading : 7.5 |
| Writing: 6.5 | Speaking: 6.5 | CEFR Level: C1 |

**Old IELTS:**   
Test Date: 08-12-2021  
Centre Number: PK015  
Candidate Number: 011405  
Candidate ID: 42401-6161925-9  
Test Report Form Number: 21PK011405TM015A

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| Total: 6.5 | Listening :7.0 | Reading : 6.0 |
| Writing: 6.5 | Speaking: 6.5 | CEFR Level: B2 |

**Contacts**   
Zong: +92 311 5112586  
 +923115112586  
 00923115112586

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Proximus: +32 47 60 92 614

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[mali.vv1998@gmail.com](mailto:mali.vv1998@gmail.com)  
[mali.v5642@gmail.com](mailto:mali.v5642@gmail.com)  
[2016n0468@gmail.com](mailto:2016n0468@gmail.com)  
[mmali.nov1998@gmail.com](mailto:mmali.nov1998@gmail.com)

**Microsoft Mails:**  
[muhammad.m.ali@student.jyu.fi](mailto:muhammad.m.ali@student.jyu.fi)  
[muhammad.ali2@student.kuleuven.be](mailto:muhammad.ali2@student.kuleuven.be)  
[muhammad.ali@etu.univ-st-etienne.fr](mailto:muhammad.ali@etu.univ-st-etienne.fr)  
[muhammad.ali@etu.umontpellier.fr](mailto:muhammad.ali@etu.umontpellier.fr)  
[bsee1826@pieas.edu.pk](mailto:bsee1826@pieas.edu.pk)  
  
**Addresses:**  
Shamako, Marghuz 23530, Swabi, Khyber Pakhtunkhwa, Pakistan   
Marghuz, Swabi, Khyber Pakhtunkhwa, Pakistan  
Saadat Book Depot, Main Bazaar, Marghuz 23530, Swabi, KPK/ Khyber Pakhtunkhwa, Pakistan  
Moh Shamako Mian Baba, Vill and PO Murghuz, Distt Swabi, Khyber Pakhtunkhwa, Pakistan  
11th floor, Saudi Pak tower building, Sector F-7/4, Blue Area, Islamabad  
Hostel B-205, PIEAS University, Lehtrar Road, Nilore 45650, Islamabad  
Helvintie 2 H A 3 / b, 40500 Jyväskylä, Finland  
Helvintie 2 H A 3 / b, 40500, Jyväskylä, (Central Finland) Keski-Suomi, Finland  
Room 05, floor 01, Gansakker 27, 2440 Geel, Belgium  
Room 0302, Geldenaaksevest 74, 3000 Leuven, Belgium  
Room 3012, 259 Voie Domitienne 34096 Montpellier Cedex 5, France  
(Montpellier, Hérault department, (Languedoc-Roussillon) Occitanie region, southern France)

**Postal Codes:**  
Murghuz: 23530   
Nilore: 45650  
SPT, Islamabad: 44210   
Jyväskylä, Finland: 40500  
Geel, Belgium 2440  
Leuven, Belgium 3000  
Montpellier, France 34096

**Family CNICs:**

Muhammad Ali:

42401-6161925-9

Fazal Arif:

42401-1933334-3

Nagina:

42401-1773254-2

Zohaib:

42401-7430881-9

Saneela:

42401-4999440-2

Khaula

42201-2557796-0

**Emergency Contact**

|  |  |
| --- | --- |
| **Name**: Saadat Iqbal Email: [saadatbooks@hotmail.com](mailto:saadatbooks@hotmail.com) Phone No: +92 314 5570700 Relationship: Uncle Occupation: Book seller Address: Saadat Book Depot, Main Bazaar, Marghuz 23530, Swabi, KPK, Pakistan | **Name**: Fazal Arif Email: [fafazalarif@gmail.com](mailto:fafazalarif@gmail.com) Phone no: Telenor: +92 346 5710581 Warid: +92 321 9739972 Relationship: Father Occupation: Pensioner (Retired from PAF) Address: Moh Shamako Mian Baba, Vill and PO Murghuz, Distt Swabi,KPK, Pakistan |
| **Name**: Muhammad Ikram  Email:  Phone No: +92 321 9014376  Relationship: Uncle  Occupation:  Address: |  |

**References:**

|  |  |
| --- | --- |
| Dr. Naeem Iqbal Dean Research  Professor PIEAS,  E-mail: [naeem@pieas.edu.pk](mailto:naeem@pieas.edu.pk) Contact no: +92 333 5253452 | Dr. Haroon-ur-Rashid  Director Academics Professor, PIEAS E-mail: [haroon@pieas.edu.pk](mailto:haroon@pieas.edu.pk) Contact no: +92 333 5981109 |
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| Dr. Sufi Tabassum Gul  Professor, PIEAS  E-mail: [tabassum\_gul@pieas.edu.pk](mailto:tabassum_gul@pieas.edu.pk) | Dr. Muhammad Tufail  Professor, PIEAS  E-mail**:** [tufail@pieas.edu.pk](mailto:tufail@pieas.edu.pk) |
| Dr. Panu Ruotsalainen  Senior Lecturer University of Jyväskylä, Finland Email: [*panu.ruotsalainen@jyu.fi*](mailto:panu.ruotsalainen@jyu.fi)Contact no: +358408053741 |  |

|  |  |
| --- | --- |
| **Dr Naeem Iqbal** (Professor, PIEAS) Dean Research, PIEAS Ph.D. Control Systems University of RENNES-I, France E-mail: [*naeem@pieas.edu.pk*](mailto:naeem@pieas.edu.pk)Contact no: +92 333 5253452 | **Dr. Haroon-ur-Rashid** (Professor, PIEAS) Director Academics, PIEAS Ph.D. High-performance Multicore Architectures, Beijing Institute of Technology, China MSc Electrical Engineering  IOWA State University, USA  Academic and Research Profile: [*http://faculty.pieas.edu.pk/haroon/*](http://faculty.pieas.edu.pk/haroon/) E-mail: [*haroon@pieas.edu.pk*](mailto:haroon@pieas.edu.pk) Phone: +92-51-9248724 Mobile: +92 333 5981109 |
| **Dr Muhammad Abid**(Professor, PIEAS)  Ph.D. Electrical Engineering Univ. Duisburg-Essen, Germany  Email: [*mabid@pieas.edu.pk*](mailto:mabid@pieas.edu.pk)Academic and Research Profile: [*http://faculty.pieas.edu.pk/abid/*](http://faculty.pieas.edu.pk/abid/)Phone: +92 51 2207381 - 84 Ext: 3440Phone: +92 (51) 22 07 381 Mobile: +92 313 5987495 | **Dr. Shakeel Ahmed** (Professor, PIEAS) Ph.D. Communication Engineering and Informatics University of Electro-Communications, Japan Academic and Research Profile:  [*https://sites.google.com/view/shakeelahmed*](https://sites.google.com/view/shakeelahmed) E-mail: [*shakeelahmed@pieas.edu.pk*](mailto:shakeelahmed@pieas.edu.pk) Office (Tel): +92-51-9240680-84, Ext:3419 Mobile: +92 333 0950385 |
| **Dr. Sufi Tabassum Gul** (Professor, PIEAS) PhD Digital Signal Proessing & Telecommunications,  SUPELEC/University of Rennes-I, France MS Embedded Systems for Mobile Communications, University of Nice, France E-mail: [tabassum\_gul@pieas.edu.pk](mailto:tabassum_gul@pieas.edu.pk) | **Dr. Muhammad Tufail** (Professor, PIEAS) PhD Electronic Engineering,  Tohoku University, Sendai, Japan Academic and Research Profile:  <https://sites.google.com/site/drtufailpieas/home/> E-mail: [tufail@pieas.edu.pk](mailto:tufail@pieas.edu.pk) |
| **Dr. Panu Ruotsalainen**  Senior Lecturer Department of Physics,  University of Jyväskylä Box 35 (YFL) 40014 University of Jyväskylä  Survontie 9, Jyväskylä, Finland Email: [*panu.ruotsalainen@jyu.fi*](mailto:panu.ruotsalainen@jyu.fi)Academic and Research Profile: [*https://www.jyu.fi/en/people/panu-ruotsalainen*](https://www.jyu.fi/en/people/panu-ruotsalainen)Mobile: +358408053741 |  |

**Social**

|  |  |
| --- | --- |
| *●* linkedin.com/in/m--ali/  *●* https://bit.ly/3t5Pb4a *●* Skype: +923115112586  *●* facebook.com/mmm.aali *●* facebook.com/vspace.x *●* facebook.com/YourWritingss *●* instagram.com/ali\_writes\_arts *●* instagram.com/m\_\_a.l.i  *●* twitter.com/M\_\_\_\_\_\_\_\_\_Ali | *●* [linkedin.com/in/m--ali/](https://www.linkedin.com/in/m--ali/)  *●* <https://bit.ly/3t5Pb4a> *●* Skype: +923115112586  *●* [facebook.com/mmm.aali](https://web.facebook.com/mmm.aali) *●* [facebook.com/vspace.x](https://web.facebook.com/vspace.x) *●* [facebook.com/YourWritingss](https://web.facebook.com/YourWritingss) *●* [instagram.com/ali\_writes\_arts](https://www.instagram.com/ali_writes_arts/) *●* [instagram.com/m\_\_a.l.i/](https://www.instagram.com/m__a.l.i/)  *●* [twitter.com/M\_\_\_\_\_\_\_\_\_Ali](https://twitter.com/M_________Ali) |

<https://www.youtube.com/channel/UCsPRU_Ky28m6ErgJiiemHpw>

<https://www.linkedin.com/in/m--ali/>

**Education**

**• School** ▪ Fazaia Degree College, MRF, Kamra  
 ▪ Percentage: 95.23 %  
 ▪ Marks: 1000/1050  
 ▪ 25/03/2013 – 27/03/2015  
 ▪ 25-Mar-2013 – 27-Mar-2015  
 ▪ Field of Study: Science/Pre-engineering ▪ (04/25/2013 – 03/27/2015)  
 ▪ Education Level: Secondary School Certificate / School  
 ▪ Degree: Matric  
 ▪ Degree Level: Matriculation  
 ▪ Title: School: Science  
 ▪ Website: fazaia.edu.pk/fdcmrf  
 ▪ Roll Number: 117836  
 ▪ Registration Number: 1522441066  
 ▪ Major Courses:  
 Mathematics, Physics, Chemistry, Biology, English, Urdu, Islamiat, Pakistan Studies  
 ▪ Activities and Societies Sports, Declamations, Functions, Farewell and Welcome parties   
 ▪ Description:   
 One of the top educational institutions of Pakistan

**• College** ▪ Fazaia Degree College, Risalpur   
 ▪ Percentage: 83%  
 ▪ Total Marks: 913/1100  
 ▪ 13/07/2015 – 26/05/2017  
 ▪ 13-July-2015 – 26-May-2017  
 ▪ Field of Study: Pre-engineering  
 ▪ (06/13/2015 – 05/25/2017)  
 ▪ Education Level: Higher Secondary School / High School  
 ▪ Degree: FSC Pre-engineering  
 ▪ Degree Level: Intermediate  
 ▪ Title: College: Pre-engineering  
 ▪ Website: fazaia.edu.pk/fdcrisalpur  
 ▪ Roll Number: 506738  
 ▪ Registration Number: 1744063028  
 ▪ Address Risalpur, NowsheraKhyber Pakhtunkhwa, Pakistan  
 ▪ Major Courses:  
 Physics, Chemistry, Mathematics, English, Urdu, Islamic Studies, Pakistan Studies  
 ▪ Activities and Societies Sports, Declamations, Functions, Farewell and Welcome parties   
 ▪ Description:   
 One of the top educational institutions of Pakistan

**• Bachelor of Science (BS)** ▪ Degree: Bachelor in Science in Electrical Engineering  
 ▪ B.S. Electrical and Electronics Engineering  
 ▪ Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Title: B.S. Electronics Engineering   
 ▪ Title: B.S. Electrical and Electronics Engineering  
 ▪ Major: Electronics Engineering  
 ▪ Bachelor of Science (BS)  
 ▪ Current CGPA: 3.72/4.00  
 ▪ Percentage: 93%  
 ▪ Minimum possible GPA: 2.00  
 ▪ Distinction: Graduation with 2nd distinction  
 ▪ 10/09/2018 – 27/06/2022  
 ▪ 10-Sep-2018 – 27-Jun-2022  
 ▪ (09/10/2018 --- 06/27/2022)  
 ▪ Degree: BS (Hons)  
 ▪ Degree Level: Bachelors of Science  
 ▪ Website: pieas.edu.pk  
 ▪ Reg No: 02-3-1 -032-2018  
 ▪ Serial No: 005780  
 ▪ Total Credits: 137  
 ▪ Address: PIEAS University, Lehtrar Road, Nilore 45650, Islamabad Capital Territory, Pakistan  
 ▪ Postal Code: 45650  
 ▪ College Code: 999073  
 ▪ ID institution code (Erasmus MIR website): PAK0077  
 ▪ College: Department of Electrical Engineering  
 ▪ Contact: [registrar@pieas.edu.pk](mailto:registrar@pieas.edu.pk)  
 ▪ Website: <http://www.pieas.edu.pk/>  
 ▪ University ranked 2nd in Pakistan (According to QS world ranking)  
 ▪ Thesis title: Implementation of deep learning control for a Quadcopter  
 ▪ Thesis grading: 4.00/4.00  
 ▪ Average CGPA for all students in your degree: 2.9/4.00  
 ▪ Major Courses:  
*Computational Intelligence, Data Structures and Algorithms, Fundamentals of Robotics, Real-Time Embedded Systems*, *Microprocessor & Interfacing, Integrated and Power Electronics,* *FPGA Based Design, Computer Fundamentals and Programming*

▪ Activities and Societies

|  |  |
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| *Societies:* | *Activities:* |
| *PIEAS Volunteer Society (PVS) PIEAS Robotic Society PIEAS Society for Physics IEEE PIEAS Student Branch PIEAS Sportic Society (PSS) PIEAS Literary Society (PLS) PIEAS Debating Society (PDS) PIEAS Media Club (PMS) PIEAS Thematic Society (PTS) PIEAS Cyber Security Club etc* | *PIEAS Literary Festival PIEAS Orientation Week PIEAS Olympiad Sports Week Annual Night TEDx PIEAS  International Seminars International Workshops Videography Photography Graphic Designing etc* |

▪ Description *The Pakistan Institute of Engineering and Applied Sciences (PIEAS) is a public research university located in Islamabad, Pakistan. It is the top-ranked university in the country according to the International QS ranking. The university is modeled on international standards with a strong focus on the scientific advancement.*

*PIEAS is the top-ranked university in the country according to the International QS ranking 2021. The university is modeled on international standards with a strong focus on the scientific advancement.*

▪ Result:

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| --- | --- | --- | --- |
| **Semester 1** | | **Semester 2** | |
| ▪ Computer Fundamentals and Programming (Lab)  ▪ Computer Fundamentals and Programming (Theory)  ▪ Composition and Grammar  ▪ Circuit Analysis-I (Lab)  ▪ Circuit Analysis-I (Theory)  ▪ Calculus-I  ▪ Engineering Physics (Lab)  ▪ Engineering Physics (Theory) | 1 A+ 4.00  3 A+ 4.00  2 A 4.00 1 A+ 4.00  3 A+ 4.00  3 A+ 4.00  1 A- 3.67  3 B 3.00 | ▪ Communication Skills  ▪ Electronic Devices and Circuits (Lab)  ▪ Electronic Devices and Circuits (Theory)  ▪ Engineering Drawing  ▪ Engineering Mechanics (Lab)  ▪ Engineering Mechanics (Theory)  ▪ Calculus-II  ▪ Ordinary Differential Equations | 3 A+ 4.00  1 A+ 4.00 3 A 4.00  1 A+ 4.00 1 A+ 4.00  2 A+ 4.00 3 A+ 4.00  3 A- 3.67 |
| **CumCrHr:** 17 **GPA:** 3.80  **CGPA:** 3.80 | | **CumCrHr:** 34 **GPA:** 3.94  **CGPA:** 3.87 | |
| **Semester 3** | | **Semester 4** | |
| ▪ Electronic Circuit Design (Lab)  ▪ Electronic Circuit Design (Theory)  ▪ Digital Logic Design (Lab)  ▪ Digital Logic Design (Theory)  ▪ Circuit Analysis-II (Lab)  ▪ Circuit Analysis-II (Theory)  ▪ Workshop Practice  ▪ Linear Algebra  ▪ Complex Analysis and Applications | 1 A 4.00 3 A 4.00  1 A+ 4.00  3 A 4.00  1 A+ 4.00  3 B 3.00  1 A 4.00  2 A+ 4.00  3 A- 3.67 | ▪ Islamic Studies  ▪ Technical Writing  ▪ Electrical Machines (Theory)  ▪ Signals & Systems Theory  ▪ Microprocessor & Interfacing (Theory)  ▪ Applied Thermodynamics | 2 A- 3.67  3 A- 3.67  3 B+ 3.33  3 A- 3.67  3 B- 2.67  3 A+ 4.00 |
| **CumCrHr:** 52 **GPA:** 3.78  **CGPA:** 3.84 | | **CumCrHr:** 69 **GPA:** 3.49  **CGPA:** 3.75 | |
| **Semester 5** | | **Semester 6** | |
| ▪ Electrical Machines (Lab)  ▪ Microprocessor & Interfacing (Lab)  ▪ Measurement and Instrumentation (Lab)  ▪ Measurement and Instrumentation (Theory)  ▪ Electromagnetic Theory  ▪ Integrated Electronics (Lab)  ▪ Integrated Electronics (Theory)  ▪ Communication Systems (Lab)  ▪ Communication Systems (Theory)  ▪ Probability and Random Variables | 1 A 4.00  1 A+ 4.00  1 A- 3.67  3 A- 3.67  3 A+ 4.00  1 A 4.00  3 A- 3.67  1 A 4.00  3 A- 3.67  3 A+ 4.00 | ▪ Engineering Economics  ▪ FPGA Based Design (Lab)  ▪ FPGA Based Design (Theory)  ▪ Power Electronics (Lab)  ▪ Power Electronics (Theory)  ▪ Fundamentals of Robotics (Lab)  ▪ Fundamentals of Robotics (Theory)  ▪ Engineering Computation Methods | 2 A- 3.67  1 A 4.00  3 A- 3.67  1 A- 3.67  3 B+ 3.33  1 A- 3.67  3 B 3.00  3 A 4.00 |
| **CumCrHr:** 89 **GPA:** 3.80  **CGPA:** 3.77 | | **CumCrHr:** 106 **GPA:** 3.57  **CGPA:** 3.74 | |
| **Semester 7** | | **Semester 8** | |
| ▪ Entrepreneurship  ▪ Digital Signal Processing (Lab)  ▪ Digital Signal Processing (Theory)  ▪ Linear Control System (Lab)  ▪ Linear Control System (Theory)  ▪ Real Time Embedded Systems (Lab)  ▪ Real Time Embedded Systems (Theory)  ▪ Thesis Project | 2 B+ 3.33  1 A+ 4.00  3 A- 3.67  1 A 4.00  3 A 4.00  1 A- 3.67  3 B+ 3.33  3 A 4.00 | ▪ Data Structures and Algorithms (Lab) ▪ Data Structures and Algorithms (Theory)  ▪ Pakistan Studies  ▪ Principles of Management  ▪ Electrical Power Systems  ▪ Thesis Project  ▪ Computational Intelligence in Engineering Applications | 1 A 4.00 3 C+ 2.33  2 A 4.00 2 B+ 3.33  3 A 4.00  3 A 4.00  NC A 4.00 |
| **CumCrHr:** 123 **GPA:** 3.73  **CGPA:** 3.74 | | **CumCrHr:** 137 **GPA:** 3.55  **CGPA:** 3.72 | |

▪ Courses:

|  |  |  |
| --- | --- | --- |
| Computer Fundamentals and Programming  Composition and Grammar  Circuit Analysis  Calculus  Engineering Physics  Communication Skills  Electronic Devices and Circuits  Engineering Drawing  Engineering Mechanics  Ordinary Differential Equations  Electronic Circuit Design  Digital Logic Design  Linear Algebra  Complex Analysis and Applications | Islamic Studies  Technical Writing  Electrical Machines  Signals & Systems Theory  Microprocessor & Interfacing  Applied Thermodynamics  Measurement and Instrumentation  Electromagnetic Theory  Integrated Electronics  Communication Systems  Probability and Random Variables  Engineering Economics  FPGA Based Design  Power Electronics  Fundamentals of Robotics  Engineering Computation Methods | Real-Time Embedded Systems  Linear Control Systems  Digital Signal Processing  Entrepreneurship  Thesis Project  Data Structures and Algorithms  Computational Intelligence in Engineering Application  Pakistan Studies  Principles of Management  Electrical Power Systems |

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| --- | --- | --- |
| **Mathematics** Computational Intelligence  Complex Analysis and Applications Ordinary Differential Equations  Linear Algebra  Probability and Random Variables Engineering Computation Methods  Calculus-I and II Signals & Systems Theory Digital Signal Processing  Electromagnetic Theory Linear Control Systems  Measurement and Instrumentation Communication Systems  **Embedded Systems** Real-Time Embedded Systems Microprocessor & Interfacing FPGA Based Design Fundamentals of Robotics | **Electronics** Circuit Analysis-I and II Electronic Devices and Circuits Electronic Circuit Design Digital Logic Design Power Electronics Integrated Electronics  **Power** Electrical Machines  Electrical Power Systems  **Computer** Computer Fundamentals and Programming Data Structures and Algorithms Thesis: Implementation of deep learning control for a Quadcopter | **Personal development** Composition and Grammar Communication Skills Technical Writing Grooming and Sprucing  **Economics** Engineering Economics Entrepreneurship Principles of Management  **Other** Engineering Mechanics Engineering Physics Engineering Drawing Applied Thermodynamics |

• Linear Algebra 4.00/4.00

• Computational Intelligence 4.00/4.00

• Probability and Random Variables 4.00/4.00

• Engineering Computation Methods 4.00/4.00

• Calculus-I and II 4.00/4.00

• Complex Analysis and Applications 3.67/4.00

• Ordinary Differential Equations 3.67/4.00

• Linear Control Systems 4.00/4.00

• Signals & Systems Theory 3.67/4.00

• Digital Signal Processing 3.67/4.00

• Electromagnetic Theory 3.33/4.00

• Measurement and Instrumentation 3.67/4.00

• Communication Systems 3.67/4.00

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| --- | --- | --- | --- |
| **Subject name** | **Textbook** | **Year** | **Grade** |
| Computational Intelligence | 1- Computational Intelligence\_ Synergies of Fuzzy Logic, Neural Networks and Evolutionary Computing-Wiley (2013) (Nazmul Siddique, Hojjat Adeli-)  2-Computational Intelligence An Introduction, Second Edition - (2007)  3-Fundamentals of NNs Laurene Fausett | 2022 | 4.00/4.00 |
| Complex Analysis and Applications | Complex Variables and Application 8th edition-Brown-Churchill | 2019 | 3.67/4.00 |
| Ordinary Differential Equations | Advanced Engineering Mathematics 10th Edition by Erwin Erwin Kreyszig | 2019 | 3.67/4.00 |
| Linear Algebra | Linear Algebra and its Applications David C Lay (4th Edition) | 2019 | 4.00/4.00 |
| Probability and Random Variables | Bertsekas-Tsitsiklis, Introduction to probability | 2020 | 4.00/4.00 |
| Engineering Computation Methods |  | 2021 | 4.00/4.00 |
| Communication Systems | Modern Digital and Analog Communication Systems by B. P. Lathi, Zhi Din | 2020 | 3.67/4.00 |
| Calculus-I and II | Thomas’ Calculus 14ed [2017] | 2019 | 4.00/4.00 |
| Signals & Systems Theory | 1- Signals & Systems Schaum  2- Alan V. Oppenheim, Alan S. Willsky, with S. Hamid-Signals and Systems-Prentice Hall (1996) | 2020 | 3.67/4.00 |
| Digital Signal Processing | Ifeachor Jervis- Digital Signal Processing -A Practical Approach -2E | 2021 | 3.67/4.00 |
| Electromagnetic Theory | 1-Engineering Electromagnetics - William Hayt  2- Electrodynamics by Griffiths | 2020 | 4.00/4.00 |
| Linear Control Systems | Control Systems Engineering 7th edition by Nise | 2021 | 4.00/4.00 |
| Measurement and Instrumentation | 1- K. Lal Kishore - Electronic Measurements & Instrumentation-Pearson Education (2012)  2- Introduction to Instrumentation and Measurements by Northrop, Robert B. | 2020 | 3.67/4.00 |
|  |  |  |  |
| Real-Time Embedded Systems | Xiaocong\_Fan-Real-Time\_Embedded\_Systems\_Design | 2021 | 3.33/4.00 |
| Microprocessor & Interfacing | Yiu J.- The Definitive Guide to ARM Cortex -M3 and Cortex-M4 Processors | 2020 | 2.67/4.00 |
| FPGA Based Design |  | 2021 | 3.67/4.00 |
| Fundamentals of Robotics | 1-Robert J. Shilling-Fundamentals of robotics  2-Fuzzy Logic Control by Passino | 2021 | 3.00/4.00 |
| Electrical Machines | Electric\_Machinery\_Fundamentals 4th edition by Chapman | 2020 | 3.33/4.00 |
|  |  |  |  |
| Circuit Analysis-I and II | Introductory Circuit analysis by robert l. boylestad | 2018 | 4.00/4.00 |
| Electronic Devices and Circuits | Microelectronic Circuits Sedra Smith-7th Edn | 2019 | 4.00/4.00 |
| Electronic Circuit Design | Microelectronic circuits 6th edition | 2019 | 4.00/4.00 |
| Power Electronics | 1-Mohan-Power Electronics  2-[Muhammad H. Rashid]-Power electronics devices | 2021 | 3.33/4.00 |
| Integrated Electronics | 1- Microelectronic Circuits Sedra Smith, 7th E 2- Digital Logic And Computer Design By M. Morris Mano | 2020 | 3.67/4.00 |
| Digital Logic Design | Digital Logic Design by Morris Mano | 2019 | 4.00/4.00 |
| Electrical Power Systems | Gilbert M. Masters - Renewable and Efficient Electric Power System (2013) | 2022 | 4.00/4.00 |
|  |  |  |  |
| Computer Fundamentals and Programming | [Robert\_Lafore]-Object oriented programming in C++ | 2018 | 4.00/4.00 |
| Data Structures and Algorithms |  | 2022 | 2.33/4.00 |
| Engineering Mechanics | 1- Engineering Mechanics Statics-13th Edition by Hibbeler  2-Hibbeler-Engineering Mechanics Dynamics 13th | 2019 | 4.00/4.00 |
| Engineering Economics |  | 2021 | 3.67/4.00 |
| Entrepreneurship |  | 2021 | 3.33/4.00 |

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| TensorFlow 2.0 Complete Course – Python Neural Networks | Online- *freecodecamp.org* | 2021 |  |
| Python full Course for Beginners | Online- *freecodecamp.org* | 2021 |  |
| C++ full Course for Beginners | Online- *freecodecamp.org* | 2018 |  |
| Reinforcement Learning Using Python | Online- *Edureka* | 2022 |  |
| React full course for beginners | Online- *CodeWithHarry* | 2022 |  |
| Tailwind CSS Tutorials | Online- *CodeWithHarry* | 2022 |  |
| CSS Complete Course - Zero to Hero | Online- *freecodecamp.org* | 2019 |  |
| HTML Full Course - Build a Website Tutorial | Online- *freecodecamp.org* | 2019 |  |
| Java Programming | Online- *Great Learning Academy* | 2020 |  |
| Android Development Tutorial | Online- *CodeWithHarry* | 2019 |  |
| Gazebo Simulator Course | Online- *Robotogeddon* | 2021 |  |
| Neural networks | Online- *3Blue1Brown* | 2021 |  |
| 9 Axis Inertial Measurement Units with Arduino | Online- *Paul McWhorter* | 2021 |  |
| PID Control systems with Arduino | Online- *Paul McWhorter* | 2021 |  |

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| 5G Core | Huawei Training course | 2022 |  |
| Evolved Packet Core | Huawei Training course | 2022 |  |
| Telecom Cloud | Huawei Training course | 2022 |  |

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| --- | --- |
| **• Linear Algebra** ▪ Matrices, Vectors, Determinants. Linear Systems  ▪ Matrix Eigenvalues and Eigenvectors  ▪ Vector Differential Calculus. Grad, Div, Curl  ▪ Vector Integral Calculus. Integral Theorems | **• Ordinary Differential Equations** ▪ First-Order ODEs  ▪ Second-Order Linear ODEs  ▪ Higher Order Linear ODEs  ▪ Laplace Transforms |
| **• Calculus**  ▪ Limits and Continuity  ▪ Differentiation  ▪ Integration  ▪ Definite Integrals  ▪ Techniques of Integration  ▪ Polar Coordinates  ▪ Infinite Sequences and Series  ▪ Vectors and the Geometry of Space  ▪ Partial Derivatives  ▪ Multiple Integrals  ▪ Integration in Vector Fields  ▪ First-Order Differential Equations  ▪ Second-Order Differential Equations | **• Computer Fundamentals and Programming (C++)** ▪ C++ Programming Basics  ▪ Loops and Decisions  ▪ Structures  ▪ Functions  ▪ Objects and Classes  ▪ Arrays and Strings  ▪ Operator Overloading  ▪ Inheritance  ▪ Pointers  ▪ Virtual Functions  ▪ Object-Oriented Software Development  ▪ASCII Chart |
| **• Probability and Random Variables** ▪ Sample Space and Probability  ▪ Discrete Random Variables  ▪ General Random Variables | **• Final Year Project (Python): Implementation of deep learning control for a Quadcopter** Coded in python language for training digital twin of Quadcopter in Ubuntu OS |
| **• Complex Analysis** ▪ Complex Numbers ▪ Analytic Functions  ▪ Elementary Functions  ▪ Integrals  ▪ Series  ▪ Residues and Poles  ▪ Applications of Residues | **• Signals & Systems Theory** ▪ Signals & Systems  ▪ Linear Time-Invariant Systems  ▪ Laplace Transform & Continuous-Time LTI Systems  ▪ z-Transform & Discrete-Time LTI Systems  ▪ Fourier Analysis of Continuous-Time Signals & Systems  ▪ Fourier Analysis of Discrete-Time Signals & Systems |
| **• Data Structures and Algorithms (Python)** ▪ Python language review▪ Asymptotic Notation  ▪ Linear Data Structure: Linked List and Variants  ▪ Linear Data Structure: Stack and Applications  ▪ Linear Data Structure: Queues and variants  ▪ Algorithm: Recursion and Types  ▪ Non-Linear Data Structure: Binary Trees  ▪ Tree Traversal Algorithms  ▪ Binary Search Trees and Applications  ▪ Non-Linear Data Structure: Graphs  ▪ Shortest Path, Minimum Spanning Tree  ▪ Sorting Algorithms | **• Computational Intelligence** ▪ Neural Networks ▪ THE MCCULLOCH-PITTS NEURON ▪ Hebb Net ▪ Hopefield Net ▪ KOHONEN SELF-ORGANIZING MAPS ▪ LEARNING VECTOR QUANTIZATION ▪ Backpropagation Neural Net ▪ Alternative Weight Update Procedures: Momentum ▪ Fuzzy Logic  ▪ Evolutionary Computing  ▪ Probabilistic Methods ▪ Swarm Intelligence |
| **• Digital Signal Processing**  ▪ Discrete-Time Signals and Systems  ▪ The z-Transform  ▪ Sampling of Continuous-Time Signals  ▪ Transform Analysis of Linear Time-Invariant Systems  ▪ Structures for Discrete-Time Systems  ▪ Filter Design Techniques  ▪ The Discrete Fourier Transform  ▪ Computation of the Discrete Fourier Transform  ▪ Fourier Analysis of Signals using the Discrete Fourier Transform  ▪ Discrete Hilbert Transforms | **• Engineering Computation Methods** ▪ Mathematical Preliminaries and Error Analysis  ▪ Solutions of Equations in One Variable ▪ Interpolation and Polynomial Approximation ▪ Numerical Differentiation and Integration  ▪ Initial-Value Problems for Ordinary Differential Equations ▪ Direct Methods for Solving Linear Systems  ▪ Iterative Techniques in Matrix Algebra  ▪ Approximation Theory  ▪ Approximating Eigenvalues  ▪ Numerical Solutions of Nonlinear Systems of Equations |
| **• Professional Experience: Core Network Engineer at Huawei** ▪ 5G Core Deployment  ▪ Evolved Packet Core ▪ Network function virtualization  ▪ Cloud Edge  ▪ 2G, 3G, 4G, 5G, NFV architectures | **• Huawei’s FusionSphere Cloud OS** ▪ Core services like Keystone, Nova, Neutron, Glance, Cinder, Swift etc  ▪ Kernel-based virtual machine (KVM) |
| **• Web App development** ▪ Web App development, using react and tailwind CSS ▪ Sample Web Aoo: <https://mmali.netlify.app/> | **• Android App development**  ▪ Android App development, using Andriod studio ▪ Video: [*https://youtu.be/wOFHmuyRXFY*](https://youtu.be/wOFHmuyRXFY) |
| **• Telecom Cloud / Network Function Virtualization**  ▪ Cloud OS (FusionSphere Openstack) ▪ NFV (Network Function Virtualization) architecture ▪ VNF (Virtual Network Function) Deployment |  |
| **• Embedded Systems Projects** ▪ Implementation of deep learning control for Quadcopter  Video : [*https://youtu.be/aDtnSoSor4E*](https://youtu.be/aDtnSoSor4E)▪ Two-wheel self-balancing robot  Video : *https://youtu.be/rDXHftxl6uM* Report:[*https://bit.ly/3I8uKrR*](https://bit.ly/3I8uKrR)▪ Maze Solver Robot  Video : [*https://youtu.be/NtWT8aEdATg*](https://youtu.be/NtWT8aEdATg)▪ Line follower robot  Certificate: [*https://bit.ly/35OvHZg*](https://bit.ly/35OvHZg)▪ Controlling Servo from Web browser wirelessly using ESP32  Video : *https://bit.ly/3AkcgDW* ▪ Controlling Servo using Potentiometer and ESP32  Video : [*https://bit.ly/3bRPzNX*](https://bit.ly/3bRPzNX)▪ 15,000 mAh Laptop Power Bank  Video : [*https://youtu.be/zX1eYh3Lx2A*](https://youtu.be/zX1eYh3Lx2A)▪ Trained Reinforcement Learning agent for autonomous driving  Code : [*https://bit.ly/38nxtln*](https://bit.ly/38nxtln)▪ Reinforcement Learning for Atari Breakout Game  Code : [*https://bit.ly/3wqR8Zz*](https://bit.ly/3wqR8Zz)▪ Designed a 1kVA UPS powered by a single-phase 220V/50Hz AC.  Report: [*https://bit.ly/3MNBlv0*](https://bit.ly/3MNBlv0)▪ Designed 8-bit SAR ADC  Report: [*https://bit.ly/36cbv3a*](https://bit.ly/36cbv3a)▪ Designed and implemented a stepper motor controller  Report: [*https://bit.ly/3hZQoUu*](https://bit.ly/3hZQoUu) | **• Final Year Project (Python): Implementation of deep learning control for a Quadcopter** ▪ Video : [*https://youtu.be/aDtnSoSor4E*](https://youtu.be/aDtnSoSor4E)▪ The objectives were to replace the PID algorithm, of traditional quadcopter firmware, with Artificial Neural Networks and to improve precision and speed of response. We first assembled the Quadcopter, using cortex-M7-based STM32F722 running up to 216 MHz, which is an excellent microcontroller for artificial intelligence to be implemented on the quadcopter. For this purpose, we made a digital twin of a Quadcopter in a gazebo environment (in Ubuntu OS) and trained it using reinforcement learning. After that, we replaced the PID algorithm of traditional betaflight with our trained model, compiled it, and flashed it to the real quadcopter using the betaflight configurator. |
| **• Computational Intelligence** ▪ Neural Networks ▪ THE MCCULLOCH-PITTS NEURON ▪ Hebb Net ▪ Hopefield Net ▪ KOHONEN SELF-ORGANIZING MAPS ▪ LEARNING VECTOR QUANTIZATION ▪ Backpropagation Neural Net ▪ Alternative Weight Update Procedures: Momentum ▪ Fuzzy Logic  ▪ Evolutionary Computing  ▪ Probabilistic Methods ▪ Swarm Intelligence |  |

Grading System:

Grade GPA Percentage

A+ 4.00 95–100%

A 4.00 90–94%

A− 3.67 85–89%

B+ 3.33 80–84%

B 3.00 75–79%

B− 2.67 70–74%

C+ 2.33 65–69%

C 2.00 60–64%

D 1.0 55-59%

F 0.0 0–54%

GPA Percentage Grade

4.00 95–100% A+

4.00 90–94% A

3.67 85–89% A−

3.33 80–84% B+

3.00 75–79% B

2.67 70–74% B−

2.33 65–69% C+

2.00 60–64% C

1.0 55-59% D

0.0 0–54% F

**• Master of Science (MSc)** ▪ Erasmus Mundus Joint Master Degree in Radiation and its Effects on MicroElectronics and Photonics Technologies (EMJMD RADMEP)  
 ▪ Specialization: Microelectronics  
 ▪ 28/08/2023 – 15/09/2025  
 ▪ 28-08-2023 --- 15-09-2025  
 ▪ 28-Aug-2023 --- 15-Sep-2025  
 **▪** Coordinator: University Jean Monnet, France  
 ▪ Contact: [master.RADMEP@univ-st-etienne.fr](mailto:master.RADMEP@univ-st-etienne.fr)

• **University of Jyväskylä (JYU), Finland**

▪ 28-08-2023 --- 21-01-2024  
 ▪ 28-Aug-2023 --- 21-Jan-2024  
  
 ▪ Degree title (from the website): Master of Arts

▪ Username: mali  
 ▪ Username from website (may be wrong): wormwood  
 ▪ iAccount/ iID: i0285204

▪ Principal name: [mali@jyu.fi](mailto:mali@jyu.fi)  
 ▪ Email: [muhammad.m.ali@student.jyu.fi](mailto:muhammad.m.ali@student.jyu.fi)

▪ Password: ILA086!#biahoz  
 ▪ Finnish Personal identity code 301198-033K

▪ Personal identification number (old/wrong/not sure): 301198-9538

▪ STUDENT NUMBER: 2667692985  
 ▪ National Learner ID: 1.2.246.562.24.85934676664  
 ▪ College Code: 962288

▪ Student ID: urn:schac:personalUniqueCode:int:studentID:jyu.fi:2667692985

▪ Faculty of Mathematics and Natural Sciences  
 ▪ Department of Physics  
 ▪ Website: <https://www.jyu.fi/en>  
  
 ▪ CGPA: 3.61/5.00  
 ▪ Percentage: 72.17 %   
 ▪ Minimum possible GPA:  
 ▪ Average CGPA for all students in your degree:  
 ▪ Distinction: Graduation with \_\_\_\_ distinction  
  
 ▪ Total Credits: 32  
 ▪ Address: Department of Physics, University of Jyväskylä,   
 Survontie 9D, 40500 Jyväskylä, Finland  
 ▪ Postal Code: 40500  
 ▪ Contact: [leena.m.mattila@jyu.fi](mailto:leena.m.mattila@jyu.fi) , [arto.javanainen@jyu.fi](mailto:arto.javanainen@jyu.fi)

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| **Course** | **Code** | **Tot. Credits** | **Scale** | **Grade** | **Results (KU Leuven)** |
| Applied Semiconductor Physics | FYSS6405 | 5 | 0-5 | 3 | 13/20 |
| Numerical Methods in Physics | FYSA1130 | 4 | 0-5 | 3 | 13/20 |
| Efficient Numerical Programming | FYSS5120 | 4 | Pass/fail | Pass |  |
| Workshop: Basics of Radiation Environments and Challenges related to radiation effects | RADS1001 | 3 | Pass/fail | Pass |  |
| Electronics workshop | FYSS6382 | 2 | Pass/fail | Pass |  |
| Electronics B | FYSS6302 | 4 | 0-5 | 4 | 15/20 |
| Electron, Photon and Ion Beam Methods in Materials Science | FYSS5455 | 5 | 0-5 | 3 | 13/20 |
| Measuring Techniques and Systems | FYSS301 | 5 | 0-5 | 5 | 18/20 |
| **Total** |  | 32 | **Grade Average =>** | **3.61/5.00** | **332/460 72.17%** |

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| **Course** | **Code** |
| Applied Semiconductor Physics | ▪ Languages of learning: English, Finnish  ▪ Grading scale: General scale, 0-5  ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, Industrial visits, exercises, laboratory demos, exam. ▪ Literature: Chenming Calvin Hu, Modern Semiconductor Devices for Integrated Circuits, ISBN 978-0-13-608525-6; ISBN: 978-0-13-608525-6 ▪ Responsible teacher: Timo Sajavaara, [timo.sajavaara@jyu.fi](mailto:timo.sajavaara@jyu.fi)  ▪ Assistant: Kai Arstila, [kai.arstila@jyu.fi](mailto:kai.arstila@jyu.fi) |
| Numerical Methods in Physics | ▪ Languages of learning: English, Finnish  ▪ Grading scale: General scale, 0-5  ▪ Course type: Regular course unit ▪ Course level: Intermediate studies ▪ Study methods: Lectures, exercises, laboratory demos, exam. ▪ Literature: Newman, Computational Physics ▪ Responsible teacher: Niskanen, Kimmo; [kimmo.h.niskanen@jyu.fi](mailto:kimmo.h.niskanen@jyu.fi) ▪ Assistant teacher: Enni Rajala; [enni.k.rajala@jyu.fi](mailto:enni.k.rajala@jyu.fi) |
| Efficient Numerical Programming | ▪ Languages of learning: English, Finnish  ▪ Grading scale: Pass-Fail ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, programming workshops, assignments, laboratory work. ▪ Responsible teacher: Vesa Apaja, [vesa.apaja@jyu.fi](mailto:vesa.apaja@jyu.fi) |
| Workshop: Basics of Radiation Environments and Challenges related to radiation effects | ▪ Languages of learning: English, Finnish  ▪ Grading scale: Pass-Fail ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, exercises, laboratory demos, exam. ▪ Responsible teacher: Arto Javanainen, [arto.javanainen@jyu.fi](mailto:arto.javanainen@jyu.fi) ▪ Assistant: Kimmo Niskanen (simulations and labwork); [kimmo.h.hiskanen@jyu.fi](mailto:kimmo.h.hiskanen@jyu.fi) |
| Electronics workshop | ▪ Languages of learning: English, Finnish  ▪ Grading scale: Pass-Fail ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, supervised working at the computer class and the electronics workshop, project work, exercises, laboratory work, exam. ▪ Responsible teacher: Risto Kronholm; [risto.j.kronholm@jyu.fi](mailto:risto.j.kronholm@jyu.fi) |
| Electronics B | ▪ Languages of learning: English, Finnish  ▪ Grading scale: General scale, 0-5 ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, exercises, laboratory work, exam. ▪ Responsible teacher: Arto Javanainen, [arto.javanainen@jyu.fi](mailto:arto.javanainen@jyu.fi) ▪ Teaching assistant: Oskari Timonen; [oskari.p.i.timonen@jyu.fi](mailto:oskari.p.i.timonen@jyu.fi) ▪ Laboratory assistant: Mikko Kivekäs ; [mikko.m.kivekas@jyu.fi](mailto:mikko.m.kivekas@jyu.fi) |
| Electron, Photon and Ion Beam Methods in Materials Science | ▪ Languages of learning: English, Finnish  ▪ Grading scale: General scale, 0-5  ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, Project work including sample preparation and analysis, exercises, laboratory demos, exam. ▪ Responsible teacher: Jaakko Julin; [jaakko.julin@jyu.fi](mailto:jaakko.julin@jyu.fi) |
| Measuring Techniques and Systems | ▪ Languages of learning: English, Finnish  ▪ Grading scale: General scale, 0-5  ▪ Course type: Regular course unit ▪ Course level Advanced studies ▪ Study methods: Lectures, guest lectures, Industrial visits, exercises, laboratory demos, exam. ▪ Literature: Regtien, P.P.L.: Measurement science for engineers, 2004, Butterworth-Heinemann, London. ISBN 1903996589 ▪ Responsible teacher: Panu Ruotsalainen ; [panu.ruotsalainen@jyu.fi](mailto:panu.ruotsalainen@jyu.fi) Exercises: Jouni Ruotsalainen ; [jouni.k.a.ruotsalainen@jyu.fi](mailto:jouni.k.a.ruotsalainen@jyu.fi)  Labview: Mikko Rossi; [mikko.rossi@jyu.fi](mailto:mikko.rossi@jyu.fi) |

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| **Course** | **Code** |
| Applied Semiconductor Physics | * Charge carriers in semiconductors * energy band diagram, Fermi-level, density of states * motion of charge carriers, drift and diffusion, thermal generation * pn-junction and metal-semiconductor junction; bipolar transistor and its properties * MOS capacitor * MOS transistor and its properties * CMOS technology and integrated circuits * processing of IC components * most important fabrication and characterization techniques |
| Numerical Methods in Physics | * Numerical integrals and derivatives. * Solving linear and non-linear equations numerically. * Solve ordinary- and partial differential equations numerically. * Differences between boundary-, initial- and eigenvalue problems. * Numerical optimization and fitting * Limitations of numerics and estimating errors |
| Efficient Numerical Programming | * Python and Julia * Keras and TensorFlow libraries * Efficient C++ programming for applications in science and in mathematics * Calling C++ functions in Python code * Usage of libraries, such as GSL and Boost * Computationally efficient data structures * Pros and cons in operator overloading * Code debugging and identifying of memory leaks |
| Workshop: Basics of Radiation Environments and Challenges related to radiation effects | * Radiation Environments * Radiation types * Space * Atmosphere * Ground * Radiation-Matter Interactions * Electromagnetic radiation * Photo-electric effect * Compton Scattering * Pair production * Particle radiation * Ionizing and non-ionizing interactions * Electronic Stopping force * Nuclear Stopping force * Nuclear Reactions * Tools * Stopping * Monte Carlo * Radiation Effects in Electronic Materials * Charge generation and recombination * Linear Energy Transfer * Ion Track Structure * Straggling - Stochasticity in energy deposition * Applicability of LET * Non-ionizing energy loss (NIEL) * Radiation Effects in Devices * Cumulative effects * Total Ionizing Dose (TID) * Displacement Damage Dose (DDD) * Single Event Effects * Soft errors * Hard errors * Radiation Hardness Assurance (RHA) testing * RHA Standards * SEE testing principle * Error Cross-section * Error Bars * Error Rate Prediction * IRPP method * RPP method * Monte Carlo Method * Test Facilities * Heavy ions * Protons * High energy electrons * Gamma rays and x-rays * Neutrons |
| Electronics workshop | * Electronics workshop safety instructions * Hands-on training in basic principles of electronics circuit design, simulation and manufacturing * During the course the students will manufacture a basic amplifier circuit from scratch and implement it to measurement setup. |
| Electronics B | * Open loop and closed loop control systems * Positive and negative feedback in control systems * Fundamentals of semiconductor physics * Introduction to semiconductors devices: diodes and transistors (BJT and MOS) * Amplifier circuits and their classification * Noise sources and their classification * Introduction to data acquisition and conversion |
| Electron, Photon and Ion Beam Methods in Materials Science | * Interaction of energetic ions, electrons and photons with matter * thin film deposition techniques * ion, electron and photon beam based characterization techniques for thin films and surfaces * project work, which consists of growth of thin films using atomic layer deposition, characterization of thin films using at least two different techniques, reporting performed analysis and presenting results in a seminar. |
| Measuring Techniques and Systems | * SI-units * metrology * measurement of physical quantities * transducers * shielding against noise and its elimination * signal processing * computer aided measurement |

**• Katholieke Universiteit Leuven (KU Leuven), Belgium** ▪ 22-01-2024 --- 03-07-2024  
 ▪ 22-Jan-2024 --- 03-Jul-2024

▪ Degree: European Master of Science in Radiation and its Effects on Microelectronics and Photonics   
 Technologies (RADMEP) (Geel et al) (56129004)  
 ▪ Programme: European Master of Science in Radiation and its Effects on Microelectronics and  
 Photonics Technologies (RADMEP) (Geel et al) (2023 56129005)  
 ▪ Department/Faculty: Faculty of Industrial Engineering Sciences (51267666)  
 ▪ Faculty(uc): Faculty of Engineering Technology

▪ Campus: Geel/Yellow  
 ▪ Website: <https://www.kuleuven.be/>

▪ Website: <https://www.kuleuven.be/campussen/campus-geel>

▪ Username: r0970173  
 ▪ Username: [r0970173@kuleuven.be](mailto:r0970173@kuleuven.be)  
 ▪ Student number: 0970173

▪ MoreUnifiedUID(Username): q1685558

▪ Password(latest): ILA086!#%biahoz

▪ Password(old): FwR\*F88sNKwbxE4

▪ Email: [muhammad.ali2@student.kuleuven.be](mailto:muhammad.ali2@student.kuleuven.be)

▪ Private e-mail address: 37alirisalpur@gmail.com

▪ Private mobile phone: 03115112586 (Pakistan)

▪ KU Leuven Authenticator Pin: 7952

▪ Authenticator reset code (only latest one is valid)

▪ T2KD-5WWN-6YMT-I3IF-JIIR-MFG5

▪ Account: <https://account.kuleuven.be/myAccount>

▪ **Total Credits: 30** (only KU Leuven)

▪ CGPA/Grade: 14.15/20 (only KUL, my calculated)

▪ Percentage: 70.75% (only KUL, my calculated)

▪ Total Credits: 62 (KUL + JYU)

**▪ CGPA/Grade: 14.27/20** (KUL + JYU, my calculated)

▪ **Percentage: 71.04 %** (KUL + JYU)

▪ Minimum possible GPA:

▪ Average CGPA for all students in your degree:

▪ Distinction: Graduation with \_\_\_\_ distinction

▪ Address: Kleinhoefstraat 4, 2440 Geel, Belgium  
 ▪ Postal Code: 2440

▪ Contact: [paul.leroux@kuleuven.be](mailto:paul.leroux@kuleuven.be) , [hilde.lauwereys@kuleuven.be](mailto:hilde.lauwereys@kuleuven.be)

Analog CMOS Design

Embedded Systems (Advance compute Architecture, Systems on Chip)  
Digital Chip Design  
Analog and Mixed-Signal Chip Design  
Photonics Basics and Ethics

Project: Radiation to Electronics   
Image Sensors and Processing

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| --- | --- | --- | --- | --- | --- |
| **Code** | | **Course** | **Credits** | **Exam result** | |
| ZA0277 |  | Analog CMOS Design | 3 | 17/20 | 03.07.2024 |
|  | ZA5378 | Analog CMOS Design |  | 17/20 | 03.07.2024 |
|  | ZA5379 | Analog CMOS Design Practicum |  | 16/20 | 03.07.2024 |
| ZA0241 |  | Analog and Mixed-Signal Chip Design | 6 | 10/20 | 03.07.2024 |
|  | ZA5513 | Analog and Mixed-Signal Chip Design: Lecture |  | 10/20 | 03.07.2024 |
|  | ZA5514 | Analog and Mixed-Signal Chip Design: Lab Session |  | 13/20 | 03.07.2024 |
| ZA0240 |  | Digital Chip Design | 4 | 16/20 | 03.07.2024 |
|  | ZA5533 | Digital Chip Design: Lecture | 3 |  | 03.07.2024 |
|  | ZA5534 | Digital Chip Design: Lab Session | 1 |  | 03.07.2024 |
| ZA0239 |  | Embedded Systems | 5 | 14/20 | 03.07.2024 |
|  | ZA5511 | Advanced Computer Architecture |  | 16/20 | 03.07.2024 |
|  | ZA5512 | Systems on Chip |  | 13/20 | 03.07.2024 |
| ZA0317 |  | Image Sensors and Processing | 4 | 15/20 | 03.07.2024 |
|  | ZA5500 | Image Sensors and Processing: Lecture |  | 14/20 | 03.07.2024 |
|  | ZA5501 | Image Sensors and Processing: Lab Session |  | 16/20 | 03.07.2024 |
| ZA0242 |  | Photonics Basics and Ethics | 4 | 15/20 | 03.07.2024 |
|  | ZA5341 | Workshop: Basics of Photonic Technologies and Their use in Harsh Environments |  | 14/20 | 03.07.2024 |
|  | ZA5342 | Ethics |  | 20/20 | 03.07.2024 |
| ZA0244 |  | Project: Radiation to Electronics | 4 | 14/20 | 03.07.2024 |
|  |  | Jyvaskyla University below: |  |  |  |
| ZA0265 |  | Applied Semiconductor Physics | 5 | 13/20 | 18.04.2024 |
| ZA0323 |  | Efficient Numerical Programming | 4 | G | 18.04.2024 |
| ZA0266 |  | Electron, Photon and Ion Beam Methods in Materials Science | 5 | 13/20 | 18.04.2024 |
| ZA0271 |  | Electronics Part B | 4 | 15/20 | 18.04.2024 |
| ZA0272 |  | Electronics Workshop | 2 | G | 18.04.2024 |
| ZA0267 |  | Measuring Techniques | 5 | 18/20 | 18.04.2024 |
| ZA0268 |  | Numerical Methods in Physics | 4 | 13/20 | 18.04.2024 |
| ZA0269 |  | Workshop 1: Basics of Radiation Environments and Challenges Related to Radiation Effects | 3 | G | 18.04.2024 |
|  |  | Total (including pass/fail) | 62 |  |  |
|  |  | Total (excluding pass/fail) | 53 |  | 14.27/20 |
| 753/1060 |
| 71.04 % |

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| --- | --- | --- | --- | --- |
| **Code** | | **Course** | **Credits** | **Exam result** |
| ZA0277 |  | Analog CMOS Design | 3 | 17/20 |
|  | ZA5378 | Analog CMOS Design | 2.5 | 17/20 |
|  | ZA5379 | Analog CMOS Design Practicum | 0.5 | 16/20 |
| ZA0241 |  | Analog and Mixed-Signal Chip Design | 6 | 10/20 |
|  | ZA5513 | Analog and Mixed-Signal Chip Design: Lecture | 5 | 10/20 |
|  | ZA5514 | Analog and Mixed-Signal Chip Design: Lab Session | 1 | 13/20 |
| ZA0240 |  | Digital Chip Design | 4 | 16/20 |
|  | ZA5533 | Digital Chip Design: Lecture | 3 |  |
|  | ZA5534 | Digital Chip Design: Lab Session | 1 |  |
| ZA0239 |  | Embedded Systems | 5 | 14/20 |
|  | ZA5511 | Advanced Computer Architecture | 2 | 16/20 |
|  | ZA5512 | Systems on Chip | 3 | 13/20 |
| ZA0317 |  | Image Sensors and Processing | 4 | 15/20 |
|  | ZA5500 | Image Sensors and Processing: Lecture | 3 | 14/20 |
|  | ZA5501 | Image Sensors and Processing: Lab Session | 1 | 16/20 |
| ZA0242 |  | Photonics Basics and Ethics | 4 | 15/20 |
|  | ZA5341 | Workshop: Basics of Photonic Technologies and Their use in Harsh Environments | 3 | 14/20 |
|  | ZA5342 | Ethics | 1 | 20/20 |
| ZA0244 |  | Project: Radiation to Electronics | 4 | 14/20 |
|  |  | Total | 30 | 14.15/20 |
| 424.5/600 |
| 70.75% |

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| --- | --- | --- |
| **Course** | **Lecturer** | **Contact** |
| Analog CMOS Design |  |  |
| Analog CMOS Design | ▪ Prof Dr. Paul Leroux  ▪ Head Geel Campus, KU Leuven | ▪ Email: [paul.leroux@kuleuven.be](mailto:paul.leroux@kuleuven.be) ▪ Phone: +32 14 72 13 06 ▪ Website: <https://iiw.kuleuven.be/onderzoek/advise/People/paul_leroux> |
| Analog CMOS Design Practicum | ▪ Idham Hafizh ▪ Cooperator ▪ Research Associate | ▪ Email: [idham.hafizh@kuleuven.be](mailto:idham.hafizh@kuleuven.be)  ▪ Phone: +32 14 74 15 78 |
| Analog and Mixed-Signal Chip Design |  |  |
| Analog and Mixed-Signal Chip Design: Lecture | ▪ Prof Dr. Paul Leroux  ▪ Head Geel Campus, KU Leuven | ▪ Email: [paul.leroux@kuleuven.be](mailto:paul.leroux@kuleuven.be) ▪ Phone: +32 14 72 13 06 ▪ Website: <https://iiw.kuleuven.be/onderzoek/advise/People/paul_leroux> |
| Analog and Mixed-Signal Chip Design: Lab Session | ▪ Idham Hafizh  ▪ Cooperator  ▪ Research Associate | ▪ Email: [idham.hafizh@kuleuven.be](mailto:idham.hafizh@kuleuven.be)  ▪ Phone: +32 14 74 15 78 |
| Digital Chip Design |  |  |
| Digital Chip Design: Lecture | ▪ Professor Jeffrey Prinzie ▪ Head Subdivision 23, Geel Campus | ▪ Email: [jeffrey.prinzie@kuleuven.be](mailto:jeffrey.prinzie@kuleuven.be)  ▪ Phone: +32 14 72 13 38  ▪ Phone: +32 499 306 027 |
| Digital Chip Design: Lab Session | ▪ Stefan De Raedemaeker  ▪ Cooperator  ▪ Research Associate | ▪ Email: [stefan.deraedemaeker@kuleuven.be](mailto:stefan.deraedemaeker@kuleuven.be)  ▪ Phone: +3214741538 |
| Embedded Systems |  |  |
| Advanced Computer Architecture | ▪ Professor Jeffrey Prinzie  ▪ Head Subdivision 23, Geel  Campus | ▪ Email: [jeffrey.prinzie@kuleuven.be](mailto:jeffrey.prinzie@kuleuven.be)  ▪Phone: +32 14 72 13 38  ▪Phone: +32 499 306 027 |
| Systems on Chip | ▪ Levi Van der Elst | ▪ Email: [levi.marien@kuleuven.be](mailto:levi.marien@kuleuven.be)  ▪ Phone: +32 14 74 15 54 |
| ▪ Stefan De Raedemaeker ▪ Cooperator  ▪ Research Associate | ▪ Email: [stefan.deraedemaeker@kuleuven.be](mailto:stefan.deraedemaeker@kuleuven.be)  ▪ Phone: +3214741538 |
| Image Sensors and Processing |  |  |
| Image Sensors and Processing: Lecture | ▪ Prof Dr. Guy Meynants | ▪ Email: [guy.meynants@kuleuven.be](mailto:guy.meynants@kuleuven.be)  ▪ Phone: +32 14 72 14 79 |
| Image Sensors and Processing: Lab Session | ▪ Pedro Santos Teixeira dos Santos  (Pedro Nuno)  ▪ Cooperator  ▪ Research Associate | ▪ Email: [pedronuno.teixeiradossantos@kuleuven.be](mailto:pedronuno.teixeiradossantos@kuleuven.be)  ▪ Phone: +32 14 74 15 68 |
| Photonics Basics and Ethics |  |  |
| Workshop: Basics of Photonic Technologies and Their use in Harsh Environments | ▪ Prof Dr. Guy Meynants  ▪ Coordinator | ▪ Email: [guy.meynants@kuleuven.be](mailto:guy.meynants@kuleuven.be)  ▪ Phone: +32 14 72 14 79 |
| Ethics | ▪ Guy Claessens | ▪ Email: [guy.claessens@kuleuven.be](mailto:guy.claessens@kuleuven.be)  ▪ Phone: +3216326336 |
| Project: Radiation to Electronics | ▪ Associate Professor Valentijn De Smedt | ▪ Email: valentijn.desmedt@kuleuven.be  ▪ Phone: +32 14 72 13 10 |

**▪ University of** **Montpellier (UM), France**Faculty of Science  
Faculté des sciences

▪ 02-09-2024 --- 31-01-2025  
 ▪ 02-Sep-2023 --- 31-Jan-2025  
  
(from the 1st of September 2024 to the 31st of January 2025);

**▪** **University Jean Monnet (UJM), France** ▪ 28-08-2023 --- 15-09-2025  
 ▪ 28-Aug-2023 --- 15-Sep-2025

Jean Monnet University Portal

Login

am05948y

Password:

Z.ZF.57a+KAZrGb

Email:

muhammad.ali@etu.univ-st-etienne.fr

Personal Email:

37alirisalpur@gmail.com

https://cas.univ-st-etienne.fr/esup-cas/login

<https://myujmetudiants.univ-st-etienne.fr/fr/index.html>  
  
ceremony (from the 1st of September 2025 to the 15th of September 2025).

**Programming Languages**

**A1(no knowledge) to C2(professional senior programmer)**

**• Python :** level=**C1 :** I have a very strong base in python as I have used it for my final year research project at the university i.e., implementation of deep learning control for a quadcopter. I also have studied a course and performed lab in python language (Data Structures and Algorithms)

**•:** level=**C1 :** Besides python, I have a very strong base in the C++ programming language, as I have studied the whole course and performed labs on it at the university. Furthermore, I have coded for most of my projects in C++-based Arduino IDE.

**• HTML and CSS**  **:** level=**C1 :** I have used HTML and CSS for web development

**• JavaScript :** level=**B2 :** I also have a pretty good knowledge about JavaScript as I used it for making my web portfolio.

**• Java :** level=**B2 :** Furthermore, I have hands-on experience in Java. I studied it in an online course and used it for making an Android P2P messaging App.

**• MATLAB :** level=**B2 :** Apart from that, I have very good experience in MATLAB also, as I have used it in many labs like Fundamentals of Robotics, Linear Control Systems, and Digital Signal Processing.

(not working)

**Projects**

**•** Implementation of deep learning control for Quadcopter  
 Video : [*https://youtu.be/aDtnSoSor4E*](https://youtu.be/aDtnSoSor4E)**•** Two-wheel self-balancing robot  
 Video : *https://youtu.be/rDXHftxl6uM*  
Report:[*https://bit.ly/3I8uKrR*](https://bit.ly/3I8uKrR)**(not working)**Certificate:[*https://bit.ly/3IcEiBP*](https://bit.ly/3IcEiBP)**(not working)****•** Maze Solver Robot  
 Video : [*https://youtu.be/NtWT8aEdATg*](https://youtu.be/NtWT8aEdATg)**•** Line follower robot  
 Certificate: [*https://bit.ly/47u4xlu*](https://bit.ly/47u4xlu)  
**•** Controlling Servo from Web browser wirelessly using ESP32  
 Video : *https://bit.ly/3AkcgDW***•** Controlling Servo using Potentiometer and ESP32  
 Video : [*https://bit.ly/3bRPzNX*](https://bit.ly/3bRPzNX)**•** 15,000 mAh Laptop Power Bank  
 Video : [*https://youtu.be/zX1eYh3Lx2A*](https://youtu.be/zX1eYh3Lx2A)**•** Android P2P messaging App  
 Video: [*https://youtu.be/wOFHmuyRXFY*](https://youtu.be/wOFHmuyRXFY) Report:[*https://bit.ly/3KHV5yi*](https://bit.ly/3KHV5yi)**(not working)****•** Trained Reinforcement Learning agent for autonomous driving  
 Code : [*https://bit.ly/3XK0TRA*](https://bit.ly/3XK0TRA)

**•** Reinforcement Learning for Atari Breakout Game  
 Code : [*https://bit.ly/4gp5IXw*](https://bit.ly/4gp5IXw)

**•** Trained Neural Network for Image prediction  
 Video : [*https://bit.ly/3lek8P8*](https://bit.ly/3lek8P8)**•** Training CartPole to balance itself  
 Code : [*https://bit.ly/4dU5NRv*](https://bit.ly/4dU5NRv)  
**•** Tic-tac-toe game using a C++ programming language  
 Report:[*https://bit.ly/3TvCmx3*](https://bit.ly/3TvCmx3)  
**•** Detection of cracks in Ceramic Tiles using Digital Image Processing  
 Report: [*https://bit.ly/3B5lC9p*](https://bit.ly/3B5lC9p)  
**•** Designed a 1kVA UPS powered by a single-phase 220V/50Hz AC.  
 Report: [*https://bit.ly/3XKDAXu*](https://bit.ly/3XKDAXu)  
**•** Designed 8-bit SAR ADC (2021)  
 Report: [*https://bit.ly/4gtEL5h*](https://bit.ly/4gtEL5h)  
**•** Designed and implemented a stepper motor controller  
 Report: [*https://bit.ly/3XICQlJ*](https://bit.ly/3XICQlJ)  
**•** 35% Duty Cycle Rectangular Waveform using Astable Multivibrator (555 Timer)  
 Report: [*https://bit.ly/47qdP28*](https://bit.ly/47qdP28)  
**•** Designed a filter  
 ▪ that removes cross-over distortion from class B push-pull amplifier  
 ▪ that minimizes noise coming from a tape recorder.  
 ▪ for a car alternator.  
 Report: [*https://bit.ly/4d5papE*](https://bit.ly/4d5papE)

**•** Implementation of deep learning control for Quadcopter  
 ▪ Date: 23-08-2021 ---> 01-06-2022  
 ▪ Position: Team Lead  
 ▪ Video : [*https://youtu.be/aDtnSoSor4E*](https://youtu.be/aDtnSoSor4E) ▪ Supervisor: Dr. Muhammad Aqil   
 ▪ Tools: STM32 MCU, ESC, Brushless motors, Radio transceiver, GymFC, Reinforcement Learning  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
  
Machine Leaning

My final year thesis project at the university was the ‘Implementation of deep learning control for a Quadcopter’. Our objectives were to replace the PID algorithm of traditional quadcopter firmwares with Artificial Neural Networks and to improve precision and speed of response. For this purpose, we first made a digital twin of Quadcopter in a gazebo environment (in Ubuntu OS) and trained it using reinforcement learning. After that, we replaced the PID algorithm of traditional betaflight with our trained model and compiled it to create a hex file. Then we assembled the Quadcopter, using cortex-M7-based STM32F722 running up to 216 MHz, which is an excellent microcontroller for artificial intelligence to be implemented on the quadcopter. Finally, we flashed the hex file to the quadcopter using the betaflight configurator.

Embedded Systems

My final year thesis project at the university was the ‘Implementation of deep learning control for a Quadcopter’. We first assembled the Quadcopter, using cortex-M7-based STM32F722 running up to 216 MHz, which is an excellent microcontroller for artificial intelligence to be implemented on the quadcopter. Our objectives were to replace the PID algorithm of traditional quadcopter firmwares with Artificial Neural Networks and to improve precision and speed of response. For this purpose, we made a digital twin of Quadcopter in a gazebo environment (in Ubuntu OS) and trained it using reinforcement learning. After that, we replaced the PID algorithm of traditional betaflight with our trained model and compiled it to create a hex file. Finally, we flashed the hex file to the quadcopter using the betaflight configurator.

• Implementation of deep learning control for a Quadcopter   
▫ Assembled the Quadcopter (using STM32F722 MCU-based Mateksys FC F722-STD, ESC, Brushless motors, PDM, Radio transceiver etc)   
▫ Made digital twin of Quadcopter in gazebo environment (in Ubuntu OS)   
▫ Trained the model through Proximal Policy Optimization, a reinforcement learning algorithm   
▫ Replaced the PID algorithm of betaflight with our trained model   
▫ Compiled the modified betaflight to create a hex file   
▫ Flashed the hex file to quadcopter using betaflight configurator   
▪ Video: <https://youtu.be/aDtnSoSor4E>

My final year project at the university is a Neural Network based semi-autonomous quadcopter. We used cortex-M7 based STM32F722 running up to 216 MHz, which is an excellent microcontroller for artificial intelligence to be implemented on the quadcopter. The project addresses limitations of PID control, giving the quadcopter the ability to adapt, plan, and learn in dynamic flight conditions. The project replaces the traditional PID algorithm with Neural Network and then translates the parallel computations of Neural Network into serial computations, thus making it suitable for implementation in the microcontroller, hence the need for expensive boards like FPGAs can be avoided.

▪ Made digital twin of Quadcopter in gazebo environment (in Ubuntu OS)  
 ▪ Trained the model through Proximal Policy Optimization, a reinforcement learning algorithm  
 ▪ Replaced the PID algorithm of betaflight with our trained model  
 ▪ Compiled the modified betaflight to create a hex file  
 ▪ Assembled the Quadcopter (used STM32F722 microcontroller which runs up to 216 MHz)  
 ▪ Flashed the hex file to quadcopter using betaflight configurator

**•** FPGA-based TCP Firewall on Zynq and MicroBlaze with Mailbox, BRAM, and DDR Storage  
 ▪ Date: 28/April/2024 - 19/May/2024   
 ▪ Slides:[*https://bit.ly/46CVrTf*](https://bit.ly/46CVrTf) ▪ Github:[*https://github.com/muali98/TCP-firewall*](https://github.com/muali98/TCP-firewall) ▪ Position: Team Lead   
 ▪ Tools: PYNQ-Z2 FPGA  
 ▪ Institute: KU Leuven, Belgium  
 ▪ Supervisor: Levi Van der Elst / Stefan De Raedemaeker  
 ▪ Project Details  
  
The firewall works by setting up a TCP server on the Zynq Processor, which receives packets and sends the payload to the MicroBlaze. The MicroBlaze then analyzes the payload for malicious content and reports back to the Zynq, which then informs the user of the results. The firewall filters incoming data by allowing numbers and alphabets to pass through while blocking symbols.

The payload is transferred between the two processors using a mailbox and the length of the payload is communicated using BRAM (both payload and length can be transferred either using mailbox or BRAM but for testing purposes, both mailbox and BRAM were used). The server on Zynq Processor also stores TCP payloads in DDR memory, to keep the history of all the received packets, ensuring no overwrites.

**•** TID effects on Flash Memory  
 ▪ Date: 25/April/2024 - 31/May/2024   
 ▪ Report:[*https://bit.ly/4fCcrx0*](https://bit.ly/4fCcrx0) ▪ Position: Individual Project   
 ▪ Tools: SST25VF080B flash memory/ X-ray Machine/ STM32 MCU  
 ▪ Institute: KU Leuven, Belgium  
 ▪ Supervisor: Dr. Valentijn De Smedt / Stefan De Raedemaeker / Prof. Jeffrey Prinzie  
 ▪ Project Details  
  
In the project, the effects of X-ray radiation on the SST25VF080B flash memory, were studied. Initially, with 30 minutes of X-ray exposure, no data changes were observed due to the chip's radiation hardening and shielding. However, after 6 hours of exposure, significant data corruption occurred with all '0' bits flipping to '1', while '1' bits remained unaffected. Subsequent tests revealed difficulties in performing erase and write operations, attributed to potential damage in the flash memory's control logic and address buffers. After about 15 hours after testing, while the erase operation was successful, the write operation failed, indicating self-correction of transient faults and partial recovery of functionality.

**•** Image sensor characterization and measurements, and defect assessment  
 ▪ Date: 26/Mar/2024 - 29/April/2024   
 ▪ Report:[*https://bit.ly/4dz2lv1*](https://bit.ly/4dz2lv1) ▪ Position: Individual Project   
 ▪ Tools: Basler puA1280-54uc camera/ Onsemi AR0134 CMOS image sensor  
 ▪ Institute: KU Leuven, Belgium  
 ▪ Supervisor: Pedro Santos Teixeira dos Santos/ Prof Dr. Guy Meynants  
 ▪ Project Details  
  
In this project, the Basler puA1280-54uc camera, equipped with the Onsemi AR0134 CMOS image sensor, was used. Parameters such as Full Well Charge (FWC), conversion gain, read noise, and dynamic range were calculated and measured using the Photon Transfer Curve (PTC), Signal-to-Noise Ratio (SNR), and noise curves. There were slight differences between the calculated and measured values which was due to non-ideal measurement conditions and calibration errors. Spatial defect analysis revealed no dead pixels or significant row/column defects, though some hot pixels were identified.

**•** Color Filter Array (CFA) reconstruction, and Spatial Filtering  
 ▪ Date: 30/April/2024 - 24/May/2024   
 ▪ Report:[*https://bit.ly/3LXwMzp*](https://bit.ly/3LXwMzp) ▪ Position: Individual Project  
 ▪ Tools: Basler puA1280-54uc camera/ Onsemi AR0134 CMOS image sensor  
 ▪ Institute: KU Leuven, Belgium  
 ▪ Supervisor: Pedro Santos Teixeira dos Santos/ Prof Dr. Guy Meynants  
 ▪ Project Details  
  
In this project, spatial filters were employed to sharpen the images, which involved steps like applying Gaussian blur, mask creation, and unsharp masking. Color filter reconstruction was achieved through bi-linear interpolation, converting grayscale images to RGB by averaging surrounding pixel values.

**•** SAR ADC (2024)  
 ▪ Date: 29/Mar/2024 - 17/Jun/2024   
 ▪ Report:[*https://bit.ly/3yoqW71*](https://bit.ly/3yoqW71) ▪ Position: Group project   
 ▪ Tools: Cadence  
 ▪ Institute: KU Leuven, Belgium  
 ▪ Supervisor: Idham Hafizh / Prof Dr. Paul Leroux  
 ▪ Project Details  
  
A Successive Approximation Register (SAR) Analog-to-Digital Converter (ADC) is a type of ADC that converts an analog signal into a digital signal through a binary search process. This method involves comparing the input voltage to a series of reference voltages generated by a Digital-to-Analog Converter (DAC). The SAR ADC operates by iteratively adjusting a digital approximation of the input signal, with each step narrowing the range until the closest digital representation of the input is found. This makes SAR ADCs both power-efficient and capable of medium to high-resolution conversions.

The SAR logic was initially made using D-flipflops and a shift register to achieve the precise binary search process that defines SAR ADCs. We initially started with ideal components and then later refined the design by integrating transistor-based elements like True single-phase clock (TSPC) logic. This process allowed me to address such as charge injection and clock feedthrough, ensuring that my ADC met the required performance standards.

**•** 3D orientation virtualization using Accelerometer and Gyroscope  
 ▪ Date: 16/Nov/2023 - 30/Nov/2023   
 ▪ Video :   
 ▪ Report:[*https://bit.ly/499Y3IV*](https://bit.ly/499Y3IV) ▪ Certificate: ▪ Position: Team Lead   
 ▪ Tools: MPU6050, Arduino, PC  
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Dr. Panu Ruotsalainen  
 ▪ Project Details  
  
In this project, 6 Degrees of Freedom (DoF) Inertial measurement unit (IMU) sensor MPU-6050 was used. Half of the code was implemented on a microcontroller, where data from the Accelerometer and Gyroscope were merged using complementary filters and zero errors were also removed. Whereas another half of the code was implemented on a computer using Python script to visualize the orientation using a virtual 3D box.

In communication between Arduino and MPU6050, I2C protocol was used which is an Inter-Integrated Circuit protocol that uses two communication lines i.e. Serial Data Line and a Serial Clock Line. For the communication between the PC and Arduino, we used PySerial Library. After regular intervals, the Python script sent a dot signal to Arduino, in return yaw, pitch, and roll angles were received.

SCL (Serial Clock Line): is a unidirectional clock line used by the master device i.e. Arduino to synchronize the data transfer with the slave device i.e. MPU6050.

SDA (Serial Data Line): is a bidirectional data line used for transmitting and receiving angular and linear acceleration data between the Arduino and MPU6050 sensor.

**•** Temperature Measurement and Calibration using PT100  
 ▪ Date: 01/Dec/2023 - 04/Dec/2023  
 ▪ Video :   
 ▪ Report:[*https://bit.ly/49agJYm*](https://bit.ly/49agJYm) ▪ Certificate: ▪ Position: Group work  
 ▪ Tools:   
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Dr Arto Javanainen and Laboratory assistant: Mikko Kivekäs  
 ▪ Project Details  
In this project, a Resistance Temperature Detector (RTD) PT100 was used. Op-amp-based circuit was implemented to amplify the readings from PT100. In the second stage, the difference amplifier circuit was implemented to DC offset the readings to be within the microcontroller ADC range of 0-5V. After that, temperature readings were calibrated by comparing it with the correct temperature using a Python script.

**•** Elemental and Depth Profiling in multilayer thin films using Time of Flight - Elastic Recoil Detection Analysis (ToF-ERDA)  
 ▪ Date: 07/Nov/2023 - 30/Nov/2023  
 ▪ Video :   
 ▪ Report:[*http://bit.ly/3OovPl2*](http://bit.ly/3OovPl2) ▪ Certificate: ▪ Position: Group work  
 ▪ Tools: ToF-ERDA setup: Pelletron (Tandem) accelerator, sputtering ion source, detectors etc  
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Prof. Dr. Timo Sajavaara; Dr. Jaakko Julin  
 ▪ Project Details

5 different samples deposited using different techniques [like TiO2 thin film deposited on Si using ALD (Atomic Layer Deposition), etc] were analyzed using Time of Flight - Elastic Recoil Detection Analysis (ToF-ERDA). The analysis revealed atomic composition, impurities, depth, and structure. There were many reasons for impurities like contaminants in the precursor gases and interactions between different layers during the heat treatment.

In ERDA, an ion beam is directed at the sample, and particles ejected from the surface are measured for yield and energy. ERDA detects ions in the forward direction (source and detector are on the same side of the surface). Time-of-flight (ToF) detectors are used to measure the time taken by the recoiled ions to travel a known length. By analyzing the time-of-flight and energy data, the mass of the recoiled ions can be calculated.

In our ERDA setup, the incident beam consisted of 63Cu ions, which were obtained from a sputtering ion source, that was accelerated to an energy of 11.9 MeV, by a 1.7 MV Pelletron (Tandem) accelerator, which has an energy range of 0.5-15 MeV. A Pelletron Accelerator is a type of electrostatic particle accelerator, specifically a tandem accelerator, that uses electric fields to propel charged particles to high speeds, and consequently high energies.

A sputtering ion source produces negative ions from a solid target.

**•** Nanoscale Analysis of multilayer thin films using Helium Ion Microscopy (HIM)  
 ▪ Date: 17/Nov/2023 - 30/Nov/2023  
 ▪ Video :   
 ▪ Report:[*http://bit.ly/3OovPl2*](http://bit.ly/3OovPl2) ▪ Certificate: ▪ Position: Group work  
 ▪ Tools: Helium Ion Microscopy  
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Dr. Kai Arstila, Dr. Jaakko Julin  
 ▪ Project Details

5 different samples deposited using different techniques [like TiO2 thin film deposited on Si using ALD (Atomic Layer Deposition), etc] were analyzed using Helium Ion Microscopy (HIM). The images ranged from 50 microns down to 250 nm, revealing nanoscale features like crystalline or amorphous structures, surface roughness, dirt, and thickness variations.  
  
**•** RIAA Amplifier  
 ▪ Date: 04/Dec/2023 - 18/Dec/2023  
 ▪ Video :   
 ▪ Report:[*https://bit.ly/3SFCOsg*](https://bit.ly/3SFCOsg) ▪ Certificate: ▪ Position: Group work  
 ▪ Tools: LTspice  
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Risto Kronholm  
 ▪ Project Details

The RIAA amplifier plays a crucial role in vinyl record playback by correcting the frequency response of audio signals recorded on vinyl records. Vinyl records undergo a specific equalization process during recording to optimize sound quality. The purpose of the RIAA amplifier is to reverse this equalization during playback, ensuring that the original audio balance is restored.

The RIAA amplifier typically consists of capacitors, resistors, and operational amplifiers. The amplifier employs an op-amp for initial signal amplification; and capacitors and resistors are used to create high-pass and low-pass filters, which are used for boosting or attenuating treble (high) or bass (low) frequencies in accordance with the RIAA equalization curve.

**•** Parallelization in Distributed Memory Machines (eigenvalues calculation)  
 ▪ Date: 13/Oct/2023 - 14/Oct/2023  
 ▪ Video :   
 ▪ Code: [*https://bit.ly/3SBFkzZ*](https://bit.ly/3SBFkzZ) ▪ Certificate: ▪ Position: Individual Project  
 ▪ Tools:   
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Vesa Apaja, [vesa.apaja@jyu.fi](mailto:vesa.apaja@jyu.fi)  
 ▪ Project Details

**•** Parallelization in Shared memory Machines (eigenvalues calculation)  
 ▪ Date: 14/Oct/2023 - 15/Oct/2023  
 ▪ Video :   
 ▪ Code: [*https://bit.ly/47VVrga*](https://bit.ly/47VVrga) ▪ Certificate: ▪ Position: Individual Project  
 ▪ Tools:   
 ▪ Institute: Jyväskylä University, Finland  
 ▪ Supervisor: Vesa Apaja, [vesa.apaja@jyu.fi](mailto:vesa.apaja@jyu.fi)  
 ▪ Project Details

**•** Two-wheel self-balancing robot  
 ▪ Date: 02-08-2021 ---> 24-09-2021  
 ▪ Video : *https://youtu.be/rDXHftxl6uM*  
 ▪ Report:[*https://bit.ly/3I8uKrR*](https://bit.ly/3I8uKrR)**(not working)** ▪ Certificate:[*https://bit.ly/3IcEiBP*](https://bit.ly/3IcEiBP)**(not working)** ▪ Position: Team Lead  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: National Institute of Electronics (NIE), Islamabad  
 ▪ Supervisor: Sir Rizwan Chughtai  
 ▪ Project Details  
  
A two-wheel self-balancing robot is a robot uses 6-axis Inertial Measurement Unit (3-axis Accelerometer and 3-axis Gyroscope) to decode the orientation, angular and linear velocity of the robot and then adjust the speed of the robot accordingly so that it doesn’t fall.

**•** Maze Solver Robot  
 ▪ Date: 19-11-2019 ---> 20-12-2019  
 ▪ Video : [*https://youtu.be/NtWT8aEdATg*](https://youtu.be/NtWT8aEdATg) ▪ Position: Individual Project  
 ▪ Tools: Arduino, Ultrasonic sensors, Battery etc.  
 ▪ Supervisor: Dr. Nasir Jadoon  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
  
The maze-solving robot is designed to find a path without any assistance or help. As a type of autonomous robot, it must decode the path on its own to solve the maze successfully. So, its logic is quite different from the line following robot which follows a predetermined route.

**•** Line follower robot  
 ▪ Date: 19-11-2019 ---> 20-12-2019 ▪ Certificate:[*https://bit.ly/47u4xlu*](https://bit.ly/47u4xlu)  
 ▪ Position: Individual Project  
 ▪ Tools: IR sensors, Arduino, Battery etc.  
 ▪ Supervisor: Dr. Nasir Jadoon  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
  
A line follower robot is a mobile machine that can detect and follow the line drawn on the floor. Generally, the path is predefined and can be visible as a black line on a white surface with high contrasting colors. The robot senses the line with its infrared ray (IR) sensors installed under the robot. After that, the data is transmitted to the processor and the processor decides the proper commends, and then it sends them to the driver and thus the path is followed by the line follower robot.

**•** Controlling Servo from Web browser wirelessly through Wi-Fi using ESP32  
 ▪ Date: 17-03-2021 ---> 18-03-2021  
 ▪ Video : [*https://bit.ly/3AkcgDW*](https://bit.ly/3AkcgDW) ▪ Position: Individual Project  
 ▪ Tools: ESP32, Wi-Fi, Servo, Laptop, Browser, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details

**•** Controlling Servo using Potentiometer and ESP32  
 ▪ Date: 17-03-2021 ---> 18-03-2021  
 ▪ Date: 17/03/2021 ---> 18/03/2021  
 ▪ Video : [*https://bit.ly/3bRPzNX*](https://bit.ly/3bRPzNX) ▪ Position: Individual Project  
 ▪ Tools: ESP32, Potentiometer, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details

**•** 15,000 mAh Laptop power bank   
 ▪ Date: 19-07-2022 ---> 28-07-2022  
 ▪ Video : [*https://youtu.be/zX1eYh3Lx2A*](https://youtu.be/zX1eYh3Lx2A) ▪ Position: Individual Project  
 ▪ Tools: Lithium-ion cells, BMS, LEDs, Charger etc.  
 ▪ Institute: Self-made at home  
 ▪ Project Details  
Made 15,000 mAh Laptop power bank using lithium-ion cells, 40A 12V 3S BMS and self-made level indicator.

**•** Android P2P messaging App  
 ▪ Date: 07-12-2020 ---> 14-01-2021  
 ▪ Video : [*https://youtu.be/wOFHmuyRXFY*](https://youtu.be/wOFHmuyRXFY)  
 ▪ Report:[*https://bit.ly/3KHV5yi*](https://bit.ly/3KHV5yi)**(not working)** ▪ Position: Team Lead  
 ▪ Tools: Android Studio  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
  
P2P messaging app search for the peer available on the same WIFI and then connects to it using WIFI Direct. Messaging can be done without internet access or cellular data.

**•** Trained Reinforcement Learning agent for autonomous driving  
 ▪ Date: 15-05-2022 ---> 17-05-2022  
 ▪ Code : <https://bit.ly/3XK0TRA>  
 ▪ Position: Individual Project  
 ▪ Tools: Reinforcement Learning, Google Colaboratory etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
 Trained the virtual model of a car for autonomous driving.  
**•** Reinforcement Learning for Atari Breakout Game  
 ▪ Date: 17-05-2022 ---> 18-05-2022  
 ▪ Code : [*https://bit.ly/4gp5IXw*](https://bit.ly/4gp5IXw)  
 ▪ Position: Individual Project  
 ▪ Tools: Reinforcement Learning, Google Colaboratory etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
 Trained Reinforcement Learning agent for Atari Breakout Game

**•** Trained Neural Network for Image prediction  
 ▪ Date: 28-04-2022 ---> 30-04-2022  
 ▪ Video : [*https://bit.ly/3lek8P8*](https://bit.ly/3lek8P8) ▪ Position: Individual Project  
 ▪ Tools: Neural Networks, Google Colaboratory etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
 In this project, Neural Network classifies pictures into different categories.  
**•** Training CartPole to balance itself  
 ▪ Date: 11-05-2022 ---> 14-05-2022  
 ▪ Code : [*https://bit.ly/4dU5NRv*](https://bit.ly/4dU5NRv)  
 ▪ Position: Individual Project  
 ▪ Tools: Reinforcement Learning, Google Colaboratory etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
 Trained Reinforcement Learning agent to balance CartPole

**•** Tic-tac-toe game using a C++ programming language  
 ▪ Date: 06-12-2018 ---> 16-12-2018  
 ▪ Report:[*https://bit.ly/3TvCmx3*](https://bit.ly/3TvCmx3)  
 ▪ Position: Individual Project  
 ▪ Tools: Visual Studio, C++ etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
 Made the tic-tac-toe game using a C++

*From here continue (tools and details)*

**•** Designed a 1kVA UPS powered by a single-phase 220V/50Hz AC.  
 ▪ Date: 18-06-2021 ---> 27-06-2021  
 ▪ Report:[*https://bit.ly/3XKDAXu*](https://bit.ly/3XKDAXu)  
 ▪ Position: Team Lead  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details(1 kVA= 1000 W) the UPS needs to provide a clean and stable power supply, free from voltage distortion, frequency variations, electrical noise, harmonics, spikes, brownouts, and surges. If any of these issues occur in the mains supply at a significant level then critical loads and computer systems can fail.

**•** Designed 8-bit SAR ADC (2021)  
 ▪ Date: 28-12-2020 ---> 13-01-2021  
 ▪ Report:[*https://bit.ly/4gtEL5h*](https://bit.ly/4gtEL5h)  
 ▪ Position: Team Lead  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
**•** Designed and implemented a stepper motor controller  
 ▪ Date: 13-12-2019 ---> 14-01-2020  
 ▪ Report:[*https://bit.ly/3XICQlJ*](https://bit.ly/3XICQlJ)  
 ▪ Position: Team Member  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
**•** 35% Duty Cycle Rectangular Waveform using Astable Multivibrator (555 Timer)  
 ▪ Date: 23-12-2019 ---> 30-12-2019  
 ▪ Report:[*https://bit.ly/47qdP28*](https://bit.ly/47qdP28) ▪ Position: Team Lead  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
**•** Detection of cracks in Ceramic Tiles using Digital Image Processing  
 ▪ Date: 30-12-2021 ---> 06-01-2022  
 ▪ Report:[*https://bit.ly/3B5lC9p*](https://bit.ly/3B5lC9p)  
 ▪ Position: Team Lead  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details  
**•** Designed a filter  
 i- that removes cross-over distortion from class B push-pull amplifier  
 ii- that minimizes noise coming from a tape recorder  
 iii- for a car alternator.

Designed a filter (i) that removes cross-over distortion from class B push-pull amplifier (ii) that minimizes noise coming from a tape recorder (iii) for a car alternator.  
  
 ▪ Date: 02-01-2020 ---> 09-01-2020  
 ▪ Report:[*https://bit.ly/4d5papE*](https://bit.ly/4d5papE)  
 ▪ Position: Team Member  
 ▪ Tools: IMU, Arduino, Motors, Battery etc.  
 ▪ Institute: Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad  
 ▪ Project Details

**Work Experience**

1- Cloud core Network Engineer at Huawei, OEC tower, Isb  
2- Robotics Engineer at National Institute of Electronics (NIE), Isb  
3- Vice-president IEEE Robotics PIEAS Student Branch  
4- 3D nanofabric SRAM design, IMEC, Leuven, Belgium  
5- 3D nanofabric SRAM design, LIRMM, Montpellier, France

• 3D SRAM Macro Design in 3D Nanofabric Process Technology, imec, Leuven, Belgium  
Region: Flemish Brabant or Vlaams Brabant  
 ▪ Date: Date: 21-06-2024 ---> **25-08-2024**   
During my internship at IMEC in Leuven, Belgium, I worked on a 3D SRAM design using a novel nanofabric technique that allows the printing of 3D structures in a single process. This approach significantly reduced the wafer footprint and enhanced the performance (less delay and energy consumption) of the SRAM macro.

The two-phase internship on the topic “3D SRAM design in nano-fabric technology”, was scheduled at imec in Leuven, Belgium, and LIRMM labs in France (the objective is to transfer the expertise of imec to LIRMM). I re-did and learned the work of Dr Dawit Abdi at imec. 3D SRAM design using a novel nanofabric technology allows the printing of 3D structures in a single process. This approach significantly reduced the wafer footprint and enhanced the performance (less delay and energy consumption) of the SRAM macro.

During my two-phase internship at imec in Leuven, Belgium, and LIRMM labs in France on the topic “3D SRAM Macro Design in 3D Nanofabric Process Technology (the objective is to transfer the expertise of imec to LIRMM by assisting the incoming PhD student), I re-did, learned and also contributed little to the work of Dr Dawit Abdi at imec. 3D SRAM design using a novel nanofabric technology allows the printing of 3D structures in a single process. This approach significantly reduced the wafer footprint and enhanced the performance (less delay and energy consumption) of the SRAM macro.

• LIRMM - Laboratoire d'informatique, de robotique et de microélectronique de Montpellier  
The Montpellier Laboratory of Computer Science, Robotics and Microelectronics  
Montpellier, France  
<https://www.lirmm.fr/>

In the second phase of my internship at LIRMM (the first phase was at imec, as described in the previous experience), I will transfer the knowledge of "3D SRAM design in nano-fabric technology" to LIRMM by assisting the incoming PhD student

• Cloud Core Network Engineer at Huawei, SPT tower, Isb  
 ▪ Date: 22-08-2022 --- 26-07-2023   
 ▪ Group Leader: 03-10-2022 --- 26-07-2023   
 ▪ Projects: 5G Core Deployment (AMF), Cloud Edge (MME), Network function virtualization (FusionSphere OpenStack)  
• Robotics Engineer at National Institute of Electronics, Sector H-9, Isb  
 ▪ Date: 02-08-2021 --- 24-09-2021  
 ▪ Made two-wheel self-balancing robot  
  
• Vice-president IEEE Robotics PIEAS Student Branch  
 ▪ Date: 20-Sep-2021 --- 16-May-2022  
 ▪ Responsibilities: Organizing seminars and workshops on Robotics

**•** Title: Cloud Core Network Engineer at Huawei, OEC tower, Islamabad, Pakistan  
 ▪ Company Name: Huawei  
 ▪ Date: 01-08-2022 ---> 26-07-2023   
 ▪ Date: 01-Aug-2022 ---> 26-Jul-2023   
 ▪ Certificate:   
 ▪ Project Video:   
 ▪ Project Report:   
 ▪ Website: <https://www.huawei.com/en/>  
 ▪ Industry: Telecommunications equipment company  
 ▪ Employment type: Full time  
 ▪ Location: SPT tower, Blue Area, Islamabad, Pakistan  
 ▪ Referee: Mr. Liubo  
 ▪ Referee position: Line Manager/ Supervisor   
 ▪ Referee email: email.is.not.allowed.to.share.outside@huawei.com  
 ▪ Address: 61-A Nazim-ud-din Rd, Block L F 7/4 Blue Area, Islamabad, Pakistan  
 ▪ Responsibilities: Deploying core networks at data centers of telecom operators  
 ▪ Des + Resp:  
 ▪ Description:   
I served as a Cloud core Network Engineer at telecom giant Huawei , where I have been involved in projects like deployment of some components of 5G core, Evolved Packed core, Telecom Cloud (Network Function Virtualization)

I am currently serving as a Cloud core Network Engineer at Huawei ,where I have been involved in projects like of 5G core deployment (AMF), Evolved Packed core (MME), Telecom Cloud (Network Function Virtualization/FusionSphere OpenStack). Recently, I was awarded PKR 18,000 for securing 2nd position in Huawei’s Global Service Center Skill Contest (Cloud Core Networks) and was made group leader of 17 members.

**Huawei Projects:**

• 5G Core Deployment (AMF)   
• Cloud Edge (MME)   
• Network function virtualization (FusionSphere OpenStack)

**Huawei Training courses**

• 5G Core  
• Evolved Packet Core  
• Telecom Cloud  
• Software Define Networks

**•** Title: Robotics Intern / Engineer at National Institute of Electronics, Sector H-9/1, Isb   
 ▪ Company Name: National Institute of Electronics (NIE), Islamabad  
 ▪ Date: 02-08-2021 ---> 24-09-2021   
 ▪ Date: 02-Aug-2021 ---> 24-Sep-2021   
 ▪ Certificate: [*https://bit.ly/3IcEiBP*](https://bit.ly/3IcEiBP)**(not working)**  
 ▪ Project Video: *https://youtu.be/XZjVsQ4YW9w*  
 ▪ Project Report: [*https://bit.ly/3I8uKrR*](https://bit.ly/3I8uKrR)**(not working)**  
 ▪ Industry: Electronics Industry   
 ▪ Employment type: Internship  
 ▪ Referee: Mr. Rizwan Chughtae  
 ▪ Referee position: Supervisor   
 ▪ Referee email: not.available@nie.gov.pk  
 ▪ Location: Islamabad, Pakistan  
 ▪ Address: Plot # 17, Street # 6, Sector H-9/1 Islamabad, Pakistan  
 ▪ Website: <http://www.nie.gov.pk/>  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description

National Institute of Electronics (NIE), located in the heart of the capital of Pakistan, is the national and leading research institution in the field of electronics. It is an autonomous research institution that comes under the administrative control of Pakistan's Ministry of Science and Technology.

National Institute of Electronics (NIE), NIE is a leading research institution in the field of electronics in the country, where I made a two-wheel self-balancing robot.

▪ Made two-wheel self-balancing robot   
▫ Made frame and assembled the robot (6-axis IMU, Arduino Uno)   
▫ Coded the robot to decode the orientation, angular, and linear velocity; and then adjust the speed of the robot accordingly so that it doesn’t fall

**•** Title: Vice-president IEEE Robotics PIEAS Student Branch  
 Vice-president IEEE Robotics PIEAS SB  
 ▪ Company Name: IEEE Islamabad Section / IEEE PIEAS  
 ▪ Date: 20-09-2021 ---> *16-05-2022*  
 ▪ Date: 20-Sep-2021 ---> *16-May-2022* ▪ Certificate: [*https://bit.ly/3i150ms*](https://bit.ly/3i150ms)**(not working)**  
 ▪ Industry: Institute of Electrical and Electronics Engineers   
 ▪ Employment type: Part-Time  
 ▪ Referee: Dr. Abdul Qayuum Khan  
 ▪ Referee position: Head of department   
 ▪ Referee email: [aqkhan@pieas.edu.pk](mailto:aqkhan@pieas.edu.pk) (<-- correct: when using correct change vice-president to  
 co-head)   
 ▪ Referee email: [aqayuumkhan@pies.edu.pk](mailto:aqayuumkhan@pies.edu.pk) (<--wrong)   
 ▪ Location/ Address: PIEAS University, Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description:

IEEE PIEAS Student Branch is a society that makes students aware of the advances in the field of electronics being made around the world. It also develops a deep insight of students regarding the latest work in the field of electronics and encourages them to begin research work on their own. IEEE PIEAS Student Branch manages the technical work regarding electronics in PIEAS. IEEE Robotics is one of the domains of the IEEE PIEAS Student Branch.

Responsibilities:

Managing the team and arranging seminars and workshops on Robotics.

My responsibilities were to arrange student seminars and workshops on Robotics

**Industrial Tours**

**• imec (R&D nanoelectronics, and digital technologies)**  
 ▪ Location: Leuven, Belgium  
 ▪ Date: 09-April-2024  
 ▪ Acronym: Interuniversity Microelectronics Centre (imec)  
 ▪ Details: <https://bit.ly/3SGHPAs>  
 ▪ Website: <https://www.imec-int.com/en>

On April 9, 2024, we visited IMEC (Interuniversity Microelectronics Centre) in Leuven, Belgium, a leading research organization in nanoelectronics and digital technologies. During our visit, we toured the clean rooms where various microchips were produced and researched. One of the key features we observed was the latest clean room, which cost more than 1 billion EUR, highlighting IMEC's significant contribution to advancing semiconductor technology.

**• VTT Mikes (Metrology Research Center and Laboratory of Finland)**  
 ▪ Location: Espoo, Finland  
 ▪ Date: 21-Nov-2023  
 ▪ Details: <https://bit.ly/3Um4bsN>  
 ▪ Website: <https://www.vttresearch.com/en/industries/metrology-vtt-mikes>

We visited various metrology laboratories such as time, electrical, length, temperature, and optical spectroscopy. VTT MIKES specializes in SI unit realizations, high-accuracy measurements, and calibration technologies. As the National Metrology Institute of Finland, it administers and develops the International System of Units (SI system) at the national level. VTT MIKES plays a crucial role in providing secure, reliable, and accurate time synchronization services.

**• Viasala Oyj (Sensors for space exploration, environmental and industrial measurement)** ▪ Location: Vantaa, Finland  
 ▪ Date: 4- Oct-2023  
 ▪ Details: <https://bit.ly/4btTafg>  
 ▪ Website: <https://www.vaisala.com/en>

During our visit to Viasala, we were given a briefing on different sensors, including those that were sent to Mars, onboard the Curiosity Rover (pressure and humidity sensor). Vaisala produces products and services for space exploration, environmental and industrial measurement. We visited the company as a part of the Applied Semiconductor Physics course.

**• Okmetic (Silicon Wafer manufacture)** ▪ Location: Vantaa, Finland ▪ Date: 4- Oct-2023  
 ▪ Details: <https://bit.ly/3SkADZV>  
 ▪ Website: <https://www.okmetic.com/>

During our visit to Okmetic, we saw and were briefed about the different processes involved in silicon wafer manufacturing. Okmetic is the world's seventh largest silicon wafer manufacturer. The company specializes in providing advanced, customized silicon wafers for various applications, including MEMS, sensors, RF filters, and power devices.

**• Transfopower (Transformer manufacturer)** ▪ Location: Lahore, Pakistan ▪ Date: 18-March-2022  
 ▪ Details:<https://bit.ly/47TRqJ3> ▪ Website: <https://www.transfopower.pk/>

During our visit to Transfopower, we saw different steps involved in the manufacture of transformers. Transfopower is a prominent transformer manufacturing company in Pakistan. The company produces a range of transformers, including Distribution, Power, Furnace, Dry type, and Non-inflammable transformers.

**• Pak Elektron (Cables, Transformers, Grid stations)**  
 ▪ Location: Lahore, Pakistan  
 ▪ Date: 18-March-2022  
 ▪ Details:<https://bit.ly/494XxM8>  
 ▪ Website: <https://pel.com.pk/power/>

During our visit to Pak Elektron Limited (PEL), we saw different steps in the manufacture of High Voltage AC Cables and transformers. PEL is a Pakistani engineering corporation that operates in two segments - power and appliances. The former includes manufacturing of transformers, grid stations, and energy meters among other goods, while the latter division deals in making and assembling of home appliances.

**• Fast Cables Limited (Electrical cable manufacturer)**  
 ▪ Location: Lahore, Pakistan  
 ▪ Date: 18-March-2022  
 ▪ Details: <https://bit.ly/494oBuZ>  
 ▪ Website: <https://fast-cables.com/>

During our visit to Fast Cables Limited, we saw different steps in the manufacture of High Voltage AC Cables, as well as low voltage cables. Fast Cables Limited is Pakistan’s leading electrical cable manufacturer.

**• B-PHOT, VUB (Brussels Photonics Institute, Vrije Universiteit Brussel)** ▪ Location: Brussels, Belgium ▪ Date: 24-January-2024  
 ▪ Details:<https://bit.ly/42jOpk4> ▪ Website:<https://www.b-phot.org/>

Under the supervision of Prof. Dr. Heidi Ottevaere at B-PHOT Brussels Photonics, a research and innovation institute affiliated with the Faculty of Engineering at Vrije Universiteit Brussel, we had the opportunity to perform lab on various aspects of photonics, including Gas and Semiconductor Lasers; Optical Components like Lenses, Beam-Splitters, Neutral Density Filters, Diffraction Gratings; Broadband Sources, Optical Spectroscopy, and Filters. The Lab was part of an extensive workshop on “Photonic Technologies and Their use in Harsh Environments” organized by KU Leuven.

**Leadership Experience** **/ Membership**

1- Head Design Team at PIEAS Literary Society  
2- Head Videography at NGO Muaawin  
3- Co-head Videography PIEAS Media Club  
4- Inquiry Team Member at NGO Muaawin-e-Rozgaar  
5- Head videography at IEEE’s ISYWSC event  
6- Head videography PIEAS National Olympiad  
7- Organizing member at International Workshop on 2D and Quantum Effect Devices

• Title: Head Design Team at PIEAS Literary Society  
 ▪ Company Name: PIEAS Literary Society  
 ▪ Date: 18-01-2021 ---> 26-05-2021  
 ▪ Date: 18-Jan-2021 ---> 26-May-2021  
 ▪ Certificate: [*https://bit.ly/3i1ArwW*](https://bit.ly/3i1ArwW%20) **(not working)**  
 ▪ Industry: Literature/ Graphic Designing  
 ▪ Employment type: Part-Time  
 ▪ Location/Address: PIEAS University, Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description

PIEAS literary society (PLS) is one of the most active societies of the institute, with many literary successes to its credit. The aim of PLS is to promote literature enthusiasm, make the students fit for the future time and to develop a sense of competitive spirit, cooperation, leadership, diligence, punctuality, team spirit as well as to provide a backdrop for the development of their creative talents.

Responsibilities:

Heading a team responsible for dealing with graphic designing, making posters, templates etc.

• Title: Head Videography at NGO Muaawin  
 ▪ Company Name: NGO Muaawin  
 ▪ Date: 28-01-2021 ---> 29-06-2021  
 ▪ Date: 28-Jan-2021 ---> 29-Jun-2021  
 ▪ Certificate: [*https://bit.ly/36gOE6r*](https://bit.ly/36gOE6r)**(not working)**  
 ▪ Industry: Philanthropic Non-Governmental Organization / Videography   
 ▪ Employment type: Part-Time  
 ▪ Location/Address: Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description

Muaawin means “helper”. Muaawin is a charitable organization that provides materials and financial support to poor students. Its primary goal is to help children remain in school so that their talent and skills don’t waste because of the financial crisis and poverty. It also provides free medical facilities to deserving people specifically to the ones who can’t afford basic healthcare treatments. Its goal is to engage the youth in some useful and productive tasks so that they can take part in the betterment of Pakistan.

Responsibilities:

Heading a team responsible for dealing with videography and covering the events.

• Title: Co-Director Videography PIEAS Media Club  
 ▪ Company Name: PIEAS Media Club  
 ▪ Date: 24-11-2020 ---> 13-04-2021  
 ▪ Date: 24-Nov-2020 ---> 13-Apr-2021  
 ▪ Certificate: [*https://bit.ly/3J92gPX*](https://bit.ly/3J92gPX)**(not working)**  
 ▪ Industry: Videography  
 ▪ Employment type: Part-Time  
 ▪ Location/Address: PIEAS University, Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description:

PIEAS Media Club is one of the most active societies of PIEAS university. It covers every event that is held in the university. It has three main domains i.e., videography, photography, and graphic designing.

Responsibilities:

Teaching video-editing to the videography team of PIEAS Media Club

• Title: Inquiry Team Member at NGO Muaawin-e-Rozgaar  
 ▪ Company Name: NGO Muaawin-e-Rozgaar  
 ▪ Date: 21-12-2020 ---> 26-07-2021  
 ▪ Date: 21-Dec-2020 ---> 26-Jul-2021  
 ▪ Certificate: [*https://bit.ly/3IeALmU*](https://bit.ly/3IeALmU)**(not working)**  
 ▪ Industry: Philanthropic Non-Governmental Organization  
 ▪ Employment type: Part-Time  
 ▪ Location/Address: Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description:

Muaawin-e-Rozgaar is a non-profit Non-Governmental Organization that helps underprivileged people of the society to set up their small own businesses, their own source of income by providing them non-interest loans, buying them equipment, and assisting them throughout the initial phase of business.

Responsibilities:

Inquiring underprivileged people whether they are eligible for donations or not.

• Title: Head videography at IEEE’s ISYWSC event  
 ▪ Company Name: IEEE Islamabad Section  
 ▪ Date: 24-11-2021 ---> 15-12-2021  
 ▪ Date: 24-Nov-2021 ---> 15-Dec-2021  
 ▪ Certificate: [*https://bit.ly/3bTD2cR*](https://bit.ly/3bTD2cR)**(not working)**  
 ▪ Industry: Videography / Electronics Industry   
 ▪ Employment type: Part-Time  
 ▪ Location/Address: PIEAS University, Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description:

IEEE Islamabad Section Students/YP/WIE/SIGHT Congress (ISYWSC) is a national event that is hosted by the winning university. Our university hosted it many times. It is one of the biggest events of IEEE in Pakistan where Students, Young Professionals (YP), Women in Engineering (WIE), and the Special Interest Group on Humanitarian Technology (SIGHT) come together. There are seminars, sessions, fun activities, cultural nights, etc. at the event.

Responsibilities:

Managing a team responsible for covering the event and making a video of the event.

• Title: Head videography at PIEAS National Olympiad  
 ▪ Company Name: PIEAS University, PIEAS National Olympiad  
 ▪ Date: 12-12-2021 ---> 03-01-2022  
 ▪ Date: 12-Dec-2021 ---> 03-Jan-2022  
 ▪ Certificate: [*https://bit.ly/3w3fUjR*](https://bit.ly/3w3fUjR)**(not working)**  
 ▪ Industry: Videography  
 ▪ Employment type: Part-Time  
 ▪ Location/Address: PIEAS University, Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description:

It is the signature mega event of PIEAS that is organized by all the societies of PIEAS. It is a three-day event full of technical, non-technical, sports, and e-sports modules. PIEAS National Olympiad is one of the biggest events of the twin cities (Islamabad and Rawalpindi). The event is a collaborative effort of all the societies at PIEAS with modules ranging from sports like futsal and table tennis to every category of fine arts, including music, painting, writing, and speeches.

Responsibilities:

Managing a team responsible for covering the event and making a video of the event.

• Title: Organizing member at International Workshop on 2D and Quantum Effect Devices  
 ▪ Company Name: PIEAS University  
 ▪ Date: 12-11-2018 ---> 14-11-2018  
 ▪ Date: 12-Nov-2018 ---> 14-Nov-2018  
 ▪ Certificate: [*https://bit.ly/37sk0b1*](https://bit.ly/37sk0b1)**(not working)**  
 ▪ Industry: 2D and Quantum Effect Devices  
 ▪ Employment type: Part-Time  
 ▪ Location/Address: PIEAS University, Islamabad, Pakistan  
 ▪ Responsibilities:   
 ▪ Des + Resp:  
 ▪ Description:

Description:

It is an international workshop that is held at PIEAS university every year. Delegates from countries like the UK, Japan, China, etc. visit PIEAS for research purposes.

Responsibilities:

Receiving International guests from countries like the UK, Japan, China, etc., and assisting them during their stay in Pakistan.

**Certifications**

• Title: Java Language / Programming  
 ▪ School: Great Learning Academy   
 ▪ Date: 02-11-2021 ---> 14-12-2021  
 ▪ Date: 02-Nov-2021 ---> 14-Dec-2021  
 ▪ Certificate: [*verify.greatlearning.in/QAHDYONS*](https://bit.ly/37sk0b1)

• Title: International Kangaroo Mathematics Contest 2011  
 ▪ Area of Study: Mathematics  
 ▪ School: Fazaia Degree College, MRF, Kamra  
 ▪ Date: 17-03-2011  
 ▪ Date: 17-Mar-2011  
 ▪ Certificate: [*https://bit.ly/3QHgDhF*](https://bit.ly/3QHgDhF)**(not working)**

• Title: Member Team Management, PIEAS National Olympiad  
 ▪ School: Pakistan Institute of Engineering & Applied Sciences (PIEAS)  
 ▪ Date: 15-11-2019 ---> 20-11-2019  
 ▪ Date: 15-Nov-2019 ---> 20-Nov-2019  
 ▪ Certificate: [*https://bit.ly/3SQ70ir*](https://bit.ly/3SQ70ir)**(not working)**

• Title: Football team runner-up   
 ▪ Organizer: PIEAS Sportics Society  
 ▪ University: Pakistan Institute of Engineering & Applied Sciences (PIEAS)  
 ▪ Date: 27-10-2021  
 ▪ Date: 27-Oct-2021  
 ▪ Certificate: [*https://bit.ly/3JUPLZB*](https://bit.ly/3JUPLZB)**(not working)**

**Awards**

**Distinction Awards:**

• Graduation with 2nd distinction  
• PKR 18,000 for 2nd position in Huawei’s Global Service Center Skill Contest (Cloud Core Networks)  
• 2nd position in maze-solver robotics competition  
• 2nd position in line-follower robotics competition  
• PKR 15,000 for 2nd position in 2nd semester  
• Poster Medals  
 ▪ Master Examinee ▪ Searcher ▪ Perseverer ▪ Diligent Learner

**Professional Awards:**

• Certificate for serving as a vice-president IEEE Robotics PIEAS Student Branch  
• Certificate for serving as a robotics engineer at National Institute of Electronics  
• Cloud core Network Engineer at Huawei

**Extra-curricular/Volunteer Awards:**• Certificate for serving as a head design team at PIEAS literary society  
• Certificate for serving as a head videography at NGO Muaawin  
• Certificate for serving as a co-head videography PIEAS Media Club  
• Certificate for serving as a head videography at IEEE’s ISYWSC event  
• Certificate for serving as a head videography PIEAS National Olympiad  
• Certificate for serving as organizing member at international workshop on 2d and quantum effect devices

**Skills**

**• Electronics Boards** ESP32 MCU, Spartan 3 SoC FPGA, Arduino Due, and Arduino Mega, Uno, Nano

**• Programming Languages**  
 C++, Python, C, and Java

**• Machine Learning**  
 Reinforcement Learning

**• Sensors/ Actuators etc** Inertial Measurement Unit (3-axis gyroscope and 3-axis accelerometer), Ultrasonic, IR sensors, GPS, barometer, temperature, quadrature encoder, 3S 12V 25A Battery Management System (BMS), Radio transceiver, stepper, DC and brushless motors, servos, potentiometer etc.

**• Integrated Development Environments (IDEs)**  
 MATLAB/Simulink, Arduino IDE, Xilinx ISE, Keil, LTspice, MobotSim, ModelSim, Visual Studio,  
 Android Studio, Gazebo simulator, GymFC, Autodesk Inventor, Creo Parametric, Virtual box  
 (Linux/Ubuntu), Microsoft Word, PowerPoint, Excel

6-axis IMU; quadrature encoder; GPS, ultrasonic, IR, barometer, temperature sensors; 3S 12V 25A BMS; Radio transceiver; servo, stepper, DC, brushless motors; potentiometer

**• Practical Work**  
 PCB Designing, Veroboard usage/Soldering, Metalworks (lathe Machine, Wielding, etc.), Wood Works

**• Web Development** React, CSS, Tailwind CSS, HTML, JavaScript  
 Date: 18-Apr-2022 ---> 27-Jun-2022

**• Media**  
 Graphics Designing; Animation; Video, Photo, and Voice Editing

**• Soft Skills** Quick Learning Ability, self-management, adaptability, responsibility, time- management,  
 teamwork, leadership

**• Other**  
 Blog writing, Thoughts illustration, MS Office

**Objectives**To pursue a career in the field of Embedded systems and/or Machine Learning, and utilize my skills to significantly contribute to the company.

**Online Courses**

**•** TensorFlow 2.0 Complete Course – Python Neural Networks  
 ▪ *freecodecamp.org*

• Python full Course for Beginners  
 ▪ *freecodecamp.org*

• C++ full Course for Beginners  
 ▪ *freecodecamp.org*

• Reinforcement Learning Using Python  
 ▪ *Edureka*

• React full course for beginners  
 ▪ *CodeWithHarry*

• Tailwind CSS Tutorials  
 ▪ CodeWithHarry

• CSS Complete Course - Zero to Hero  
 ▪ *freecodecamp.org*

• HTML Full Course - Build a Website Tutorial  
 ▪ *freecodecamp.org*

• Java Programming  
 ▪ *Great Learning Academy*

• Android Development Tutorial  
 ▪ *CodeWithHarry*

• Gazebo Simulator Course  
 ▪ *Robotogeddon*

• Neural networks  
 ▪ *3Blue1Brown*

• 9 Axis Inertial Measurement Units with Arduino  
 ▪ *Paul McWhorter*

• PID Control systems with Arduino  
 ▪ *Paul McWhorter*

• Remote Delivery  
 ▪ *Huawei’s iLearning*

• Cyber Security for Service Work  
 ▪ *Huawei’s iLearning*

• PrePosition Competence for Maintenance Service  
 ▪ *Huawei’s iLearning*

• 5G Stand Alone Cloud Core Network  
 ▪ *Huawei’s iLearning*

• Evolved Packet Core (EPC Cloud Core Netork)  
 ▪ *Huawei’s iLearning*

• Telecom Cloud  
 ▪ *Huawei’s iLearning*

• 5G Nodes: Unified Data Management (UDM)and Unified Policy Control Function (UPCF)  
 ▪ *Huawei’s iLearning*

• Graphics Designing - Adobe Illustrator Complete Course  
 ▪ *GFXMentor*

• Graphic Design Theory Classes  
 ▪ *GFXMentor*

• Video-editing - Adobe Premiere Pro CC Full Course  
 ▪ *GFXMentor*

• Audio-editing- Adobe Audition  
 ▪ *GFXMentor*

• Photo-editing - Photoshop full course  
 ▪ *GFXMentor*

• Photoshop Advanced Tutorials  
 ▪ *GFXMentor*

• Mastering Logo Design in Adobe Illustrator  
 ▪ *Envato tuts+*

**Interests**

1- Embedded Systems 2- Machine Learning 3- Software Engineering 4- Robotics

**Languages**

• Urdu • English • Pushto • Punjabi • Hindi

• Urdu (5/5)  
• English (4/5)  
• Pushto (5/5)  
• Hindi (4/5)  
• Punjabi (2/5)

**Hobbies**

• Blog writing • Thoughts illustration • Video Editing • Badminton

1- Blog writing  
2- Thoughts illustration  
3- Video Editing  
4- Badminton  
5- Hiking  
6- Social media  
7- Jogging

**UDM:** Unified Data Management**:** UDM is a unified user management product in the Huawei 5G Core solution  
**UPCF**: unified Policy Control Function (uPCF): PCRF(4G) + PCF(5G): uPCF consists of EPC and 5GC network elements of policy control service, they are PCRF, PC. Huawei UPCF supports 2G/3G/4G/5G converged networks and provides access and mobility management policy control, terminal policy control, session policy control, and charging policy control.  
**PCRF**: Policy and ‘Charging Rules’ Function  
**PCF**: Policy Control Function

1- Blog writing

▪ Writing is one of my favorite hobbies. I occasionally write about the events revolving around my life, my feelings, and my experiences. I have a vast social media network on Facebook, Instagram, and Twitter. I run multiple pages on these social media platforms and have thousands of followers. Some of the pages are reserved for my personal writings while others are reserved for the public, where people share their writings. Besides this, I also write for PIEAS Literary Society, one of the oldest societies in our university PIEAS.

▪ I occasionally write about the events revolving around my life, my feelings, my experiences. I have a vast social media network on Facebook, Instagram, and Twitter with thousands of followers.

2- Thoughts’ illustration

▪ This is one of my unique hobbies. In this hobby, I make pictures, vector digital arts, and sketches of whatever is going on in my mind. Visual pictures are one of the strongest means of communication. For making digital arts, I use Adobe Illustrator software. It is one of the most advanced software available to the public for graphic designing.

▪ This is one of my unique hobbies, in which I make pictures, digital arts, and sketches of whatever is going on in my mind.

3- Video Editing

▪ Capturing events revolving around my life and then making a video out of it is one of the common things I always do. Whether be it cooking, any of my projects, any event, any beautiful scenery, any of my art or crafts, I always preserve it in a form of video and then upload it on my YouTube channel and social media pages. Furthermore, I also gave many lectures on topics of my interests, in a form of very high-quality videos. I also served as head videography at NGO Muaawin, head videography at IEEE’s ISYWSC event, co-head videography at PIEAS Media Club, and head videography at PIEAS National Olympiad. I use Adobe Premiere Pro software for video editing. It is one of the most popular, yet very advanced software available to the public for video editing.

▪ Whether be it cooking, any of my projects, any event, beautiful scenery, any of my art or crafts, I always preserve it in a form of video and then upload it on my YouTube channel. I also served as head videography at various organizations.

4-Science / Technology

▪ I have done many projects like  
 i- Neural Network based semi-autonomous Quadcopter  
 ii- Two wheel self-balancing robot  
 iii- Line follower robot  
 iv- Maze Solver Robot  
 v- Android P2P messaging App

▪ I have done many projects like Neural Network-based semi-autonomous Quadcopter, two-wheel self-balancing, Line follower, and Maze Solver Robot.

5- Hiking/ Gym/Jogging  
 ▪ Keeping myself healthy in any condition is my topmost priority. I regularly do the gym and jogging. Additionally, I occasionally go on hiking to keep myself healthy.

▪ Keeping myself healthy in any condition is my topmost priority.

6- Besides all these major hobbies, I also do the following

i- Photo Editing (Adobe Photoshop)  
 ii- Graphic Designing (Adobe Illustrator)  
 iii- Animation (Adobe After Effects)  
 iv- Voice Editing (Adobe Audition)  
 v- Video Editing (Adobe Premiere Pro)

▪ Besides all these, I also work as a graphic designer; animator; photo, and voice editor.

Referee details:  
Education + courses:  
Industrial visits:  
Projects/Ceps  
  
SOP  
LOR  
Video  
Website

Course content:

Industrial Visits:

IMEC

Projects:

1- SAR ADC

2- SoC Project

3- Radiation project

4- IMEC project

5- Image sensor lab

SOP

Skills in resume, eg Cadence

Reference letters:  
1- Jeffery Prinze ref

2- Dawit ref

PhD Fee wavier

PhD Video  
  
PhD hunt  
Thesis hunt