

Yasir Niaz Khan, Dr. rer. nat.

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Objective

After spending eight years in Europe involved in teaching and research and six years of teaching and research experience in Pakistan, looking for new fronts to apply my teaching and research skills in robotics, computer vision and machine learning..

Experience

University of Central Punjab, Lahore, Pakistan.
Assistant Professor
December 2015 – current

- Won funding of 80,000 Euros from DAAD Germany for an Agricultural Automation project together with University of Kaiserslautern, Germany for 2 years.
- Won funding of 0.3 Million from ICT RnD for Robotics Projects.
- Founding Director of UCP Center of Robotics and Security (CoRaS) since March 2016.
- Taught Undergrad course of Theory of Automata to 150 students, out of which about 70 students came to register their FYP with me.
- Graduate course of Advanced Computer Architecture.
- Organized 11th Pakistan-German International Workshop on Field and Assistive Robotics (WFAR-11) on Oct 13-15, 2016.
- Held a session for 250 students of Punjab College to attract them to Computer Science degree and Robotics research at UCP.
- Member of Board of Studies of UMT.

Research Grant DAAD, Germany

- Won funding of 100,000 Euros from DAAD Germany for an Agricultural Automation project together with University of Kaiserslautern, Germany for 3 years 2014-2016.
- Funding includes pays for 5 research assistants and 2-months fully funded research visit to Germany every year.
- Funding also includes hardware every year and also funds to arrange a yearly workshop in Germany and one in Pakistan.

FAST National University of Computer and Emerging Sciences, Lahore, Pakistan.
Assistant Professor
July 2013 – December 2015

- Assistant Professor since July 2013.
- Founding Director of Liberty Lab for Robotics and Embedded Systems since July 2013.
- Undergrad courses of Computer Architecture, Artificial Intelligence, and Computer Vision.
- Graduate courses of Mobile Robotics and Advanced Theory of Computation.
- Organized 9th Pakistan-German International Workshop on Field and Assistive Robotics (WFAR-9) on Oct 30-Nov 01, 2015.
- Organized 7th Pakistan-German International Workshop on Field and Assistive Robotics (WFAR-7) on Oct 17-Oct 18, 2014.

University of Stuttgart, Germany
Machine Learning Group
March 2013 – May 2013

- Post-Doctoral Research Fellow
- Assisted in starting the robotics research group and acquire its first robots
- Organized a Robotics Workshop in IROS 2013.

University of Tübingen, Germany

- Teaching Assistant in course “Neural Networks” in summer 2012 semester and “Artificial Intelligence” in winter semester 2011/12.
- Nominated as one of the 3 researchers to publish most papers in the whole research group in 2011.

Department of Cognitive
Systems – Robotics Group
Research Assistant
May 2009-February 2013

- Worked in a team to develop software related to robotics and computer vision.
- Development in player/stage robotics framework, OpenCV and Qt.
- Programming in C++ and Linux including threading
- Took part in a European robotics competition with the team. The team won first prize in 2010.
- Helped in a Praktikum course for Bachelor students developing small robots. Also supervised a Master thesis.

DFKI GmbH
Kaiserslautern, Germany -
Image Understanding and
Pattern Recognition Group
Part-time software developer
August 2006-April 2009

- Developed multiple desktop and web applications.
- Re-engineered many old software.
- Worked on some Google projects like Ocropus OCR.
- Worked in TurboGears, WxWidgets, XML, AJAX
- Programmed in C++ and Python on Linux, Windows and Macintosh

University of
Kaiserslautern, Germany
Robotics Research Group
Research Assistant
April 2005-April 2009

- Conducted a seminar course with three bachelor students
- Helped in a practical course for bachelor students developing small robots
- Developed robotics software in C++ and Linux
- Designed 3D models of buildings using Blender software
- Presented group's robots twice at Hannover Messe
- Maintained group's website using Typo3
- Helped in translation of robotics related lectures into English

University of
Kaiserslautern, Germany
Distance Learning Center
Software Developer
November 2008-March 2009

- Developed a complete social networking website using ELGG.
- Developed a wikifarm for automatically creating wikis.

FAST National University
of Computer & Emerging
Science, Lahore, Pakistan
2001-2004

- Taught Bachelor level courses for 2 years consisting of computer programming and object-oriented development.
- Assisted in teaching Bachelor and Master level.

Graduate Research Theses
supervised

- Using Computer Vision to detect weeds in Rice Crop.
- Using Image Processing to detect Traffic Congestion in daytime and night-time traffic, both on intersections and on road segments.
- Using Computer Vision to detect weeds in Wheat Crop.
- Using Computer Vision to detect pest infestation in Cotton Crop
- Protocol evaluation for security and efficiency of Cloud Networks
- Terrain Classification on board a fast driving wheeled robot

Undergrad Research
Projects supervised

- Campus security using Flying Robots.
- Secure ride sharing App for Pakistan's security situation
- IoT projects for home and office automation
- Autonomous flying robot for surveying large crop fields
- Converting a large toy car into a transport robot for carrying upto 50kg
- Optimized path planning for a flying robot to cover a large area
- Crowd sourcing based waiting queues App
- Crowd sourcing based traffic flow detection App
- Traffic density estimation using IoT devices
- Simulation of traffic situation of a city to optimize parameters for signal timings

Education

University of Tübingen,
Germany. 2009-2013

- PhD in Computer Science
One of the eleven elite universities in Germany.
Thesis: Visual Terrain Classification on Outdoor Mobile Robots.

**University of
Kaiserslautern,** Germany.
2006-2007

- Certificate of equivalence to German Diplom (Bachelor+Master)
Studied 3 courses to get my degrees equivalent to German Diplom degree.

**FAST National University
of Computer & Emerging
Sciences,** Lahore, Pakistan.
2001-2004

- Master of Computer Science – Major: Artificial Intelligence
Final year thesis: an application to convert dynamic hand gestures captured using a camera into English language using neural networks.

**FAST National University
of Computer & Emerging
Sciences,** Lahore, Pakistan.
1998-2001

- Bachelor of Computer Science
Final year project: a neural network based application to convert static hand gestures captured using a sensor glove into English language.

Qualifications

- 10+ years of experience in C++ and Java.
- Work experience in Linux and Windows environments, including shell scripting and Matlab.
- Web development experience in HTML, PHP, Javascript, MySQL in tools like Joomla, Typo3, Elgg, Wikifarms.
- Application design experience in UML using Rational Rose.
- Experience in software versioning tools like cvs and svn.

Spoken Languages

- English (advanced), German (intermediate), Arabic (basic), Urdu (native), Punjabi (advanced)

Affiliations

- Professional member of IEEE.
- Chair (president) of ACM Chapter at FAST-NU for the year 2002-2003.
- Founding member and first Vice-Chair of ACM (Association for Computing Machinery) chapter at FAST-NU for the year 2001-2002.
- Representative of BS batch (98) at FAST-NU.
- Took part in organizing the 20th Conference on “Mobile Robot Systems” held at University of Technology Kaiserslautern on 18-19 Oct 2007.
- Founding member and president of MSG student society at University of Kaiserslautern during 2008.
- In-charge of managing newly arriving Pakistani students at University of Kaiserslautern.
- Participated in a national competition SOFTEC in 1999 and 2000 with the softwares “YAATEC Code Generator” and “Talking Hands”.
- Founding member and General Secretary of Quran Society at FAST-NU.

Reference

- Mr. Belal Hashmi, Mr. Shafiq-ur-rehman, UCP Lahore.
- Dr. Fakhar Lodhi, Dr. Qaiser Durrani, GIFT Gujranwala.

Published Book

- **Visual Terrain Classification using Ground and Flying Robots**, Author: Yasir Niaz Khan, Publisher: LAP LAMBERT Academic Publishing, OmniScriptum GmbH & Co. KG Bahnhofstraße 28, D-66111 Saarbrücken Germany, ISBN: 978-3-659-90146-1

Publications in Pipeline

- Taskeen Ashraf, Yasir Niaz Khan, Karsten Berns. “**Weed mapping of Rice crops from a Flying Robot**”. IEEE Robotics and Automation Letters (RA-L).

- Ayesha Salahudin, Yasir Niaz Khan. “**Traffic congestion estimation based on multiple vehicle parameters**”. IEEE Transactions on Robotics.
- Novaira Noor, Yasir Niaz Khan, Karsten Berns. **Using Computer Vision for Weed Detection in Wheat Fields**. Journal of Field Robotics.
- Muhammad Danish Gondal, Yasir Niaz Khan. **Early Pest Detection from Crop using Image Processing and Computational Intelligence**. Journal of Field Robotics.
- Muhammad Ali, Jazib Sawar, Yasir Niaz Khan, et al. “**Intelligent drug devising system**”. Journal of Medicine.

Important Research Publications

- Muhammad Danish Gondal, Yasir Niaz Khan. “**Early Pest Detection from Crop using Image Processing and Computational Intelligence**”. *FAST-NU Research Journal (FRJ)*, Volume 1, Issue 1, January 2015.
- Novaira Noor, Yasir Niaz Khan. “**Weed Detection in Wheat Fields using Computer Vision**”. *7th International Workshop on Field and Assistive Robotics (WFAR-7)*, Lahore, Pakistan, Oct 2014.
- Saleha Javed, Abdullah Tariq, Yasir Niaz Khan. “**Optimized Path Planning for unmanned Aircraft Systems in Weed Detection**”. *7th International Workshop on Field and Assistive Robotics (WFAR-7)*, Lahore, Pakistan, Oct 2014.
- Ayesha Salahudin, Yasir Niaz Khan. “**Traffic congestion estimation based on multiple vehicle parameters**”. In *7th International Workshop on Field and Assistive Robotics (WFAR-7)*, Lahore, Pakistan, Oct 2014.
- Yasir Niaz Khan, Andreas Masselli, and Andreas Zell. “**Visual terrain classification by flying robots**”. In *IEEE International Conference on Robotics and Automation (ICRA)*, St. Paul, Minnesota, USA, May 2012.
- Stefan Laible, Yasir Niaz Khan, Karsten Bohlmann, and Andreas Zell. 3d lidar and camera-based terrain classification under different lighting conditions. In *Autonomous Mobile Systems (AMS), 2012 22nd Conference on*, 2012.
- Yasir Niaz Khan, Philippe Komma, and Andreas Zell. “**High resolution visual terrain classification for outdoor robots**”. In *Computer Vision Workshops (ICCV Workshops), 2011 IEEE International Conference on*, pages 1014-1021, Barcelona, Spain, Nov 2011.
- Yasir Niaz Khan, Philippe Komma, Karsten Bohlmann, and Andreas Zell. “**Grid-based visual terrain classification for outdoor robots using local features**”. In *IEEE Symposium on Computational Intelligence in Vehicles and Transportation Systems (CIVTS 2011)*, pages 16 - 22, Paris, France, Apr 2011
- Yasir Niaz Khan, Syed Atif Mehdi, “**Sign Language Recognition using Sensor Gloves**” - Proceedings of 9th International Conference on Neural Information Processing (ICONIP) held in November 2002 in Singapore, organized in part by IEEE..

Knowledge Development

- Regular speaker at IEEE Agricultural Robotics Forum at Carnegie Mellon University.
- Speaker at conferences and workshop at FAST-NU, NUST, UET, UMT, UCP, GCU Faisalabad.
- Reviewer of top robotics conferences ICRA and IROS.
- Reviewer of journals like Journal of Field Robots, IEEE Transactions on Robotics, Robotics and Automation Letters.