

# Aziz Khan

Centre for Molecular Medicine Norway (NCMM), Forskningsparken Gaustadalléen 21 0349, Oslo, Norway  
aziz.khan@ncmm.uio.no • +47 -46379301 • asntech.github.io • github.com/asntech • publons.com/a/382123

<b>EDUCATION</b>	<p><b>Tsinghua University</b>, Beijing, China</p> <p>Ph.D. in Bioinformatics 2012 – 2016 Dissertation: Prediction, analysis and annotation of super-enhancers in the human and mouse genomes Adviser: Prof. Xuegong Zhang</p> <p><b>National University of Computer &amp; Emerging Sciences</b>, Islamabad, Pakistan</p> <p>MS in Computer Science 2008 – 2010</p> <p><b>Quaid-I-Azam University</b>, Islamabad, Pakistan</p> <p>MSc in Information Technology 2006 – 2008</p> <p><b>Forman Christian College</b>, Lahore, Pakistan</p> <p>BSc in Mathematics and Physics 2003 – 2005</p>
<b>RESEARCH INTERESTS</b>	<p>Bioinformatics, computational biology, machine learning, biocuration, regulatory genomics and epigenomics, integrative analysis of high throughput sequencing data</p>
<b>RESEARCH EXPERIENCE</b>	<p><b>Postdoctoral Research Fellow</b>, Mathelier Lab, NCMM, University of Oslo 2016 - present</p> <p><b>PhD Research Student</b>, Zhang Lab, Bioinformatic Division, Tsinghua University, 2012 – 2016 Projects: Enhancer prediction, dbSUPER, imPROSE, phpDAVIDws</p> <p><b>Rotation Student</b>, Jingren Lab, School of Medicine, Tsinghua University, 2012 Project: hands-on experience with molecular cloning</p> <p><b>Rotation Student</b>, Tao Jiang, Tsinghua University &amp; University of California - Riverside, 2013 Project: Operon prediction and pathway analysis using metagenomic data</p>
<b>PROFESSIONAL EXPERIENCE</b>	<p><b>Summer Intern</b>, Merck, Beijing, Jul 2014 – Jan 2015 Developed a medical expert ranking &amp; network system using Python MVC framework Django.</p> <p><b>Consultant</b>, Microfinance Opportunities, Washington, D.C. USA, 2011 – 2016 Developed various web apps, including Financial Capability Index Portal &amp; Financial Education Library.</p> <p><b>Founder and CEO</b>, ASN tECH, <a href="http://asntech.org">http://asntech.org</a>, 2012 Founded ASN tECH with an aim to develop creative solutions that exemplify modern web standards.</p> <p><b>Web Developer</b>, Pearl Communications (Pvt.) Limited, 2011 – 2012 Designed and developed an online news publishing system and implemented HRMS using SugarHRM.</p> <p><b>Software Engineer</b>, Value Technologies, Islamabad, 2010 – 2011 Involved in all aspects of software life-cycle from analysis, design, develop, deploy and management.</p> <p><b>Intern</b>, a joint project by Harvard Univ &amp; FMFB, Aga Khan Development Network 2009 – 2010 Developed an automated data entry &amp; report generation system for participatory wealth ranking research.</p>
<b>AWARDS AND FELLOWSHIPS</b>	<p><b>Postdoctoral Fellowship</b>, NCMM, University of Oslo, 2016 – 2019</p> <p><b>HEC Research Travel Grant</b>, Higher Education Commission, Pakistan, 2016</p> <p><b>Fully-funded Chinese Govt. Scholarship</b>, for PhD program at Tsinghua University, 2012 – 2016</p> <p><b>HEC Research Travel Grant</b>, Higher Education Commission, Pakistan, 2016</p> <p><b>TWAS BIOVISION.Next Fellowship</b>, to participate in BIOVISION conference, France. 2014</p> <p><b>TWAS BIOVISION.Next Fellowship</b>, to participate in BIOVISION conference, France. 2013</p> <p><b>HEC Research Travel Grant</b>, Higher Education Commission, Pakistan, 2012</p> <p><b>1st position in article writing competition</b>, Benade Physics Society, FC College, Lahore, 2004</p>

- PUBLICATIONS**
- 1) A. Khan and A. Mathelier, "JASPAR RESTful API: accessing JASPAR data from any programming language," *Bioinformatics* 2017, *btx804*, doi: 10.1093/bioinformatics/btx804
  - 2) A. Khan et al., "JASPAR 2018: update of the open-access database of transcription factor binding profiles and its web framework," *Nucleic Acids Res* 2017, doi:10.1093/nar/gkx1126
  - 3) A. Khan, A. Montenegro-Montero and A. Mathelier, "Put science first and formatting later," *EMBO reports* 2018; doi: 10.15252/embr.201845731.
  - 4) The Bioconda Team et al., "Bioconda: A sustainable and comprehensive software distribution for the life sciences," *Nature Methods* 2018 (*In press*); *Preprint*: 10.1101/207092.
  - 5) A. Khan and A. Mathelier, "Intervene: a tool for intersection and visualization of multiple gene or genomic region sets," *BMC Bioinformatics* 2017;18:287.
  - 6) A. Khan and X. Zhang, "Integrative modelling reveals key chromatin and sequence signatures predicting super-enhancers," *bioRxiv* 2017; doi: 10.1101/105262.
  - 7) A. Khan and X. Zhang, "dbSUPER: a database of super-enhancers in mouse and human genome," *Nucleic Acids Res* 2016, 44(D1):D164–D171.
  - 8) A. Khan, A. Mathelier and X. Zhang, "Integrative analyses reveal significant differences between superand stretch enhancers in ten human cell-types," *In submission*.
  - 9) M. Ishtiaq, A. Khan, M.A. Jaffar, "A hybrid feature selection approach by combining miD and miQ," in *Proceeding of the ITFE Summer Conference* 2011, South Korea, (1), 367-373.
  - 10) M. Ishtiaq, B. Sikandar, M.A. Jaffar, A. Khan "Adaptive Watermark Strength Selection using Particle Swarm Optimization," *ICIC Express Letters*, 2010 , 4 (5), 1-6.
- POSTER PRESENTATIONS**
- 1) A. Khan et al., "JASPAR: a comprehensive database of transcription factor binding profiles," *11th International Biocuration Conference*, Shanghai Apr 2018.
  - 2) A. Khan and X. Zhang, "Integrative analysis reveals significant differences between super and stretch enhancers," *Gene Expression Data Analysis* , Mainz, Germany, Nov 2016.
  - 3) A. Khan and X. Zhang, "Computational prediction, characterization and annotation of super-enhancers and analysis of their key features," *CSH Asia meeting on Chromatin, Epigenetics and Transcription*, Suzhou, China, May 2016.
  - 4) A. Khan and X. Zhang, "dbSUPER - an extensive and interactive database of super-enhancers," *CSHA/AACR Meeting - Big Data, Comp. & Sys. Bio. in Cancer*, Suzhou, China, Dec 2015.
  - 5) A. Khan and X. Zhang, "Super-enhancer prediction from epigenetic signatures and sequence motif data," *ISMB/ECCB 2015*, Dublin, Ireland, Jul 2015.
  - 6) A. Khan and X. Zhang, "An extensive and interactive database of super-enhancers – dbSUPER," *ISCB Student Council Symposium 2015*, Dublin, Ireland, Jul 2015.
  - 7) A. Khan and X. Zhang, "An extensive and interactive database of super-enhancers – dbSUPER," *8th International Biocuration Conference (IBC)*, Beijing Apr 2015.
- TALKS**
- JASPAR: a comprehensive database of transcription factor binding profiles, *11th International Biocuration Conference*, Shanghai, China, Apr 2018.
- Comprehensive analysis, prediction, and annotation of super-enhancers, *Sven Furberg Seminar in Bioinformatics and Statistical Genomics*, Oslo, Norway, Apr 2017.
- Integrative analysis reveals significant differences between super and stretch enhancers, *Student Symposium on Computational Genomics*, Mainz, Germany, Nov 2016.
- Integration of ChIP-seq and machine learning reveals super-enhancers and features of biological significance, *Synthetic Biology Workshops*, Tsinghua University, May 2014.

<b>PROFESSIONAL ACTIVITIES</b>	<p><b>Ambassador</b>, eLife, 2018 – Present</p> <p><b>Member</b>, International Society for Computational Biology (ISCB), 2015 – Present</p> <p><b>Member</b>, NORBIS, Norway, 2017 – Present</p> <p><b>Member</b>, Centre for Digital Life Norway, 2017 – Present</p> <p><b>Member</b>, International Society for Biocuration (ISB), 2015 – Present</p> <p><b>Curator</b>, OMICtools, transcription factors and regulatory elements, 2014 – Present</p> <p><b>Chair</b>, Web Committee, ISCB Student Council, 2016 – Present</p> <p><b>Reviewer</b>, Bioinformatics, BMC Bioinformatics, OUP Database and PLOS ONE</p> <p><b>Reviewer</b>, ISCB Student Council Symposium, 2015, 2016, 2017</p>
<b>SOCIAL ACTIVITIES</b>	<p><b>Volunteer</b>, RECOMB 2013, Beijing, Apr 2013</p> <p><b>Volunteer</b>, ISMB/ECCB 2015, Dublin, and ISMB/ECCB 2017, Prague</p> <p><b>Volunteer</b>, ICML (International Conference on Machine Learning), Jun 2014</p> <p><b>Volunteer</b>, Migrant Children's Foundation (MCF), China, 2013 – present</p> <p><b>Founder</b>, Gilgit-Baltistan Academia, an academic portal, 2011</p> <p><b>Participant</b>, 3-Day Startup, Peking University, Beijing, China, 2012</p> <p><b>Participant</b>, Beijing TechHive, Microsoft Research Asia, Beijing, Mar 2015</p> <p><b>Volunteer</b>, to develop &amp; maintain Tsinghua ENCODE Journal Club website, 2013</p>
<b>SKILLS</b>	<p><b>Programing languages</b>: Python, R/Bioconductor, Shell scripting, PHP, SQL, C++</p> <p><b>Bioinformatic tools</b>: Bowtie, BWA, STAR, MACS, Tophat, Cufflinks, BEDTools, samtools, IGVTools, Galaxy, MEME, HOMER, deepTools, Snakemake, Genome Browsers etc.</p> <p><b>Machine learning tools</b>: scikit-learn, Weka</p> <p><b>Web development</b>: MVC, Django, Laravel, WordPress, R Shiny, jQuery/Ajax, HTML5, REST</p> <p><b>Databases</b>: MySQL, SQLite</p> <p><b>Operating systems</b>: Unix/Linux/Ubuntu, Mac OS, Windows</p> <p><b>Other tools</b>: LATEX, MATLAB, Cytoscape, D3.js, Adobe Photoshop, Adobe Illustrator.</p> <p><b>Other skills</b>: Integrative analysis of NGS data, development of pipelines</p>
<b>MOOC CERTIFICATIONS</b>	<p><b>Epigenetic Control of Gene Expression</b> by Marnie Blewitt, University of Melbourne – Coursera (Verified certificate with distinction)</p> <p><b>Machine Learning</b> by Andrew Ng, Stanford University – Coursera</p> <p><b>Computing for Data Analysis</b> by Roger Peng, Johns Hopkins University – Coursera</p> <p><b>Data Analysis</b> by Jeff Leek, Johns Hopkins University - Coursera</p> <p><b>Critical Thinking in Global Challenges</b> by University of Edinburgh – Coursera</p> <p><b>Genes and the Human Condition</b> by University of Maryland on Coursera</p> <p><b>Interprofessional Healthcare Informatics</b> by Karen A.M., University of Minnesota – Coursera</p>
<b>DIPLOMAS &amp; CERTIFICATIONS</b>	<p><b>Diploma in English Language</b>, National University of Modern Languages Islamabad, 2005</p> <p><b>A + Certification</b>, Iman Institute of Information Technology, Abbottabad, 2003</p> <p><b>25 Computer Application Courses</b>, Iman Institute of Information Technology, Abbottabad, 2003</p> <p><b>Web &amp; Graphics Designing</b>, Computer Center IoG, University of the Punjab, 2005</p> <p><b>Disaster &amp; Risk Management Training</b>, FOCUS Humanitarian Assistance Pakistan, 2004</p> <p><b>Banking and Accounting</b>, Sidat Haider and Kushhali Bank Limited, 2011</p>
<b>SOFTWARE &amp; DATABASES</b>	<p><b>Intervene</b>, Intersection &amp; visualization of multiple sets - <a href="http://intervene.rtfid.io">intervene.rtfid.io</a></p> <p><b>dbSUPER</b>, a database of super-enhancers - <a href="http://bioinfo.au.tsinghua.edu.cn/dbsuper">bioinfo.au.tsinghua.edu.cn/dbsuper</a></p> <p><b>JASPAR</b>, redesign of JASPAR database and it's RESTful API - <a href="http://jaspar.genereg.net">jaspar.genereg.net</a></p> <p><b>imPROSE</b>, Integrated methods to predict super-enhancers - <a href="http://asntech.github.io/improse/">asntech.github.io/improse/</a></p> <p><b>phpDAWIDws</b>, a PHP framework for DAVID - <a href="http://asntech.github.io/phpDAWIDws">http://asntech.github.io/phpDAWIDws</a></p>

<b>LANGUAGES</b>	English: Fluent (speaking, reading, writing)   Urdu: Native language Shinah: Mother tongue   German: Basic   Norwegian: Basic
<b>HOBBIES</b>	Volunteering, social work, swimming, marathon runner, traveling, football, cooking.
<b>REFERENCES</b>	<b>References are available upon request.</b>