

# Muhammad Humayoun

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## Summary

**PhD in computer science from France** with specialization in natural language morphology, syntax and semantics. Also highly experienced in programming with practical experience in natural language applications and data mining. Working knowledge of rule-based and statistical machine translation. Experienced in system development (built prototypes in Master and Doctoral studies, and an eight month software development experience in the field of data mining). A strong desire of teaching.

- **Six peer-reviewed publications** in international conferences and journals
- **Three years French scholarship** for PhD studies
- **Eight months internship** in Xerox research laboratory Europe
- Master degree from one of the best universities of Sweden

## Peer-reviewed Publications

### PhD Related

1. **M. Humayoun** and C. Raffalli (2010). **MathNat - Mathematical Text in a Controlled Natural Language**. *Special issue: Natural Language Processing and its Applications. Journal on Research in Computing Science*. Volume 46. ISSN:1870-4069. CICLing 2010:11th International Conference on Intelligent Text Processing and Computational Linguistics, March 21-27, 2010, Iasi, Romania.
2. **M. Humayoun** and C. Raffalli (2010). **MathAbs: A Representational Language for Mathematics**. *8th International Conference on Frontiers of Information Technology*. December 21-23, 2010, Islamabad, Pakistan. ACM 978-1-4503-0342-2/10/12.

## Computational Resources for Pakistani Languages

1. Shafqat M. Virk, **M. Humayoun**, A. Ranta (2011). **An Open Source Punjabi Resource Grammar**. *Proceedings of the 8th International Conference on Recent Advances in Natural Language Processing (RANLP 2011)*.
2. **M. Humayoun** and A. Ranta (2010). **Developing Punjabi Morphology, Corpus and Lexicon**. In R. Otaguro, K. Ishikawa, H. Umemoto, K. Yoshimoto, and Y. Harada, editors, *Proceedings of the 24th Pacific Asia Conference on Language, Information and Computation (PACLIC24)*. Pages 163–172. Tohoku University, Japan, November 2010. ISBN 978-4-905166-00-9.
3. Shafqat M. Virk, **M. Humayoun**, A. Ranta (2010). **An Open Source Urdu Resource Grammar**. *Proceedings of the Eight Workshop on Asian Language Resources*. August 2010, Beijing, China. Co-located with Coling 2010.
4. **M. Humayoun**, H. Hammarström, and A. Ranta (2007). **Urdu Morphology, Orthography and Lexicon Extraction**. *CAASL-2: The Second Workshop on Computational Approaches to Arabic Script-based Languages*, July 21-22, 2007, LSA 2007 Linguistic Institute, Stanford University, USA.
5. **M. Humayoun**, H. Hammarström, and A. Ranta (2007). **Implementing Urdu Grammar as Open Source Software – extended abstract**. For the tutorial given at *Conference on Language and Technology*, August 07-11, 2007, University of Peshawar, Pakistan.

## Papers in progress (related to PhD)

- An Overview of the Language of Mathematics  
(submitted in a famous French journal of computational linguistic: <http://www.atala.org/-Revue-TAL>)
- Developing a Controlled Language for Mathematics
- Case Analysis in Mathematical proofs

## Education

- **Ph.D. Computer Science** (Natural Language Processing and Technology), Feb.2007 – Jan.2012  
**University of Grenoble, France.**
  - *Title:* Developing the system MathNat for automatic formalization of Mathematical texts
  - *Short Description:* The system MathNat (**M**athematics in a controlled **N**atural language) tries to automatically formalize the language of mathematics. It provides a controlled language having a look and feel of textbook mathematics. It also supports miscellaneous linguistic features to make it natural and expressive. A number of transformations are further applied for complete formalization.
  - *Homepage:* [www.lama.univ-savoie.fr/~humayoun/phd/mathnat.html](http://www.lama.univ-savoie.fr/~humayoun/phd/mathnat.html)
- **Master of Computer Science and Engineering**, Sept.2003 – Oct.2006.  
**Chalmers University of Technology, Sweden.**
  - *Major:* Dependable Computer Systems
  - *Thesis Title:* Urdu Morphology, Orthography and Lexicon Extraction
  - *Thesis Homepage:* [www.lama.univ-savoie.fr/~humayoun/UrduMorph/index.html](http://www.lama.univ-savoie.fr/~humayoun/UrduMorph/index.html)
- Master of Computer Science, Apr.1999 – Oct.2001.  
Computer Center, Govt. Islamia College of Commerce, Pakistan.
- Bachelor of Education (Science Education), 2000 – 2001.  
Allama Iqbal Open University, Pakistan.
- Bachelor of Science (Pure & Applied Mathematics and Physics), 1997 – 1999.  
University of the Punjab, Pakistan.

## Certifications

- Sun Certified programmer for the Java 2 Platform (SCJP<sub>2</sub>), Dec.2001.
- Microsoft Certified Professional for Visual Basic 6 (MCP), Nov.2001.

## Employment

- **Graduate student**, Department of Mathematics, University of Savoie, Feb.2007 – Jan.2012
- **Collaboration** with Chalmers University of Technology Sweden for Computational resources for **Urdu** and **Punjabi** 2009–2011
- **Software development Engineer** (internship) Dec.2005 – Aug.2006  
XEROX Research Center Europe: Grenoble, France. <http://xrce.xerox.com>  
*Responsibilities:*
  - A data warehouse capable of storing very large amount of real time dataset associated with a fleet of Xerox high volume printing devices.

- Extraction Transformation and Load service (ETL) for this data warehouse.
- Accommodation of the implementation of various fault prediction algorithms to this service.
- GUI widgets enabling visualization of this data in form of graphs and charts.
- **Project Manager**, Nov.2001 – Aug.2003  
Computer Center, Govt. College for Women, Baghbanpura Lahore, Pakistan.
  - *Responsibilities*: Management of the computer science department. Teaching computer science courses to Intermediate and diploma classes.

## Professional Activities

- **Member of the organizing committee** of the first Workshop on South and Southeast Asian natural languages processing (SSANLP) – collocated with COLING 2010 (<http://www.sanlp.org/WSSANLP>)
- **Reviewer** for International Conference on Information Systems for Indian Languages, Punjabi University, India. (<http://www.icisil2011.org>)
- **Participated** in several conferences, workshops and summer schools (both national and international)

## Courses I can Teach

Computational Linguistics, Human/Natural Language Processing, Functional Programming Languages, Logic and Type Theory, Machine Learning, Artificial Intelligence, Compiler Construction, Databases, Controlled languages for mathematics and software specifications, and other courses of computer science.

## Technical Skills

- **Languages**: C/C++ (STL), MS Visual Studio.NET, Java (SE, EE, ME), Functional programming language Haskell, GUI (Scalable Vector Graphics, Java Swings), Grammatical Framework (to define natural language grammars)
- **Web**: PHP, Java Script, CSS, JDOM, Tomcat, Apache, SOAP AXIS Web services, Java Server pages, Servlets
- **Databases**: Oracle (SQL, PL/SQL), MySQL, MS SQL Server
- **Tools**: Source control tool (CVS, SVN, Darcs), Eclipse

## Languages

**English** (advance level), **French** (basic), **Urdu, Hindi, Punjabi** (native speaker).

## References

1. **Dr. Christophe Raffalli**, Associate Professor, Laboratory of Mathematics, University of Savoie, France. Tel: +33-4-79 75 81 03, [raffalli@univ-savoie.fr](mailto:raffalli@univ-savoie.fr),  
Web: [www.lama.univ-savoie.fr/~raffalli](http://www.lama.univ-savoie.fr/~raffalli)
2. **Dr. Aarne Ranta**, Professor, Department of Computer science, Chalmers University and Gothenburg University, Sweden. Tel: +46-31-772 10 82, [aarne@cs.chalmers.se](mailto:aarne@cs.chalmers.se),  
Web: [www.cs.chalmers.se/~aarne](http://www.cs.chalmers.se/~aarne)

3. **Dr. Zhaohui Luo**, Professor, Department of Computer science, Royal Holloway, University of London, U.K. Tel:+44-1784-443431, zhaohui@cs.rhul.ac.uk,  
Web: <http://www.cs.rhul.ac.uk/~zhaohui/>
4. **Dr. Loïc Pottier**, HDR (Accreditation to supervise research, equivalent to Professor), INRIA Sophia Antipolis, France. loic.pottier@inria.fr,  
Web: <http://www-sop.inria.fr/lemme/Loic.Pottier/>
5. **Mr. Victor Ciriza**, Manager, Advanced Development Laboratory, Xerox Research Center Europe, Tel: +33-4-76 61 50 86, victor.ciriza@xrce.xerox.com,  
Web: <http://www.xrce.xerox.com/Research-Development/Advanced-Development-Laboratory>

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