



## **Mohamed Attia Mohamed El Araby Ahmed, PhD**

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## CAREER-RELATED EXPERIENCE

I have been working with the software house "The Engineering Company for the Development of Computer Systems; RDI" [www.RDI-eg.com](http://www.RDI-eg.com) since July 1995 to date, where I filled many positions and played many technical, managerial, and marketing roles covering all phases from the early planning to detailed implementation

My primal concentration has always been on the R&D, software design, and implementation of the major sector of RDI's Arabic Human Language Technologies (Arabic HLT).

My career path can be briefed in what follows:

<u>Jan. 2007 to date:</u>	<b>Consultant of human language technologies.</b>
<u>Oct. 2005 to Dec. 2006:</u>	<b>Consultant of R&amp;D, and technologies marketing.</b>
<u>Jan. 2003 to Sept. 2005:</u>	<b>R&amp;D dept. manager, and technologies marketing consultant.</b>
<u>Jan. 2000 to Dec. 2002:</u>	<b>R&amp;D dept. manager.</b>
<u>Jan. 1999 to Dec. 1999:</u>	<b>Project manager in the R&amp;D dept.</b>
<u>June 1997 to Dec. 1998:</u>	<b>Senior software engineer in the R&amp;D dept.</b>
<u>July 1995 to May 1997:</u>	<b>Junior software engineer in the R&amp;D dept.</b>

## TECHNICAL ACHIEVEMENTS

<http://www.RDI-eg.com/RDI/Technologies>

- RDI's large-scale Arabic lexical analyzer; *ArabMorpho*<sup>®</sup>.
- RDI's large-scale Arabic phonetic transcriber; *ArabDiac*<sup>®</sup>.
- RDI's large-scale Arabic PoS tagger; *ArabTagger*<sup>®</sup>.
- RDI's Arabic lexical semantics analyzer; *ALSA*<sup>®</sup>, and language resource (LR).
- RDI's Arabic text search engine; *Swift*<sup>®</sup>.
- Building RDI's Arabic lexicon which is the core of all the systems mentioned above.
- Building all the training corpora, the text annotation tool; *Fassieh*<sup>®</sup>, and the statistical models building tools for all RDI's Arabic NLP suite.
- RDI's Omni Arabic font-written OCR; *Clever Page*<sup>®</sup>.

**N.B:** I have had the main role in the research, design, and implementation of all the items above.

- Participating in RDI's Arabic Text-To-Speech system *ArabTalk*<sup>®</sup>.
- Overall project management of RDI's Interactive Tajweed self-learning assistance speech system; *Hafss*<sup>®</sup>. (during 2002 to 2004)
- Managing RDI's part of the *MEDAR*<sup>1</sup> project (MEDAR stands for "Mediterranean Arabic Language and Speech Technology"); see [www.MEDAR.info](http://www.MEDAR.info).
- Managing RDI's part of the *Arabic Text Mining* project<sup>2</sup>; see <http://www.RDI-eg.com/rdi/projects/TextMining.htm>.
- Managing RDI's part of the *NEMLAR*<sup>3</sup> project (NEMLAR stands for "a Network for Euro-Mediterranean Language Resource and human language technology development and support"); see [www.NEMLAR.org](http://www.NEMLAR.org).
- Managing RDI's part of the *OrienTel*<sup>4</sup> project for telephony ASR speech resources collection and annotation in the Middle East region; see [www.Oriental.org](http://www.Oriental.org).
- The editor-in-chief of RDI's web site; [www.RDI-eg.com](http://www.RDI-eg.com).

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<sup>1</sup> MEDAR is an EU's FP7 project.

<sup>2</sup> This is one of the projects funded by the MCIT's "Data Mining & Computer Modeling" (DMCM) "Centre of Excellence" (CoE); <http://www.DMCM.elmadany.org/index.php>.

<sup>3</sup> NEMLAR is an EU (INCO-MED programme) coordinated and funded project.

<sup>4</sup> OrienTel is an EU (INCO-MED programme) coordinated and funded project.

## PATENTS

- **Attia, M., Rashwan, M.,** *A New Compact Approach to Large-Scale Arabic Lexical Semantic Analysis*, Int'l. Patent Application no. PCT/EG2007/000022 under Patent Cooperation Treaty (PCT), International filing date; July 12<sup>th</sup>, 2007.
- **Rashwan, M., Attia, M.,** *A Large-Scale Arabic Omni Font-Written OCR Based on an Analogy with HMM-Based ASR*, Int'l. Patent Application no. PCT/EG2007/000018 under Patent Cooperation Treaty (PCT), International filing date; May 15<sup>th</sup>, 2007.

## PUBLICATIONS

**N.B:** Electronic copies of most of the material in what follows (including my two theses mentioned above) are downloadable for free from the web page...

<http://www.RDI-eg.com/RDI/Technologies/paper.htm>

### Journal Papers

- **Attia, M., Rashwan, M., Al-Badrashiny, M.,** *Fassieh; a Semi-Automatic Visual Interactive Tool for the Morphological, PoS-Tags, Phonetic, and Semantic Annotation of the Arabic Text*, IEEE Transactions on Audio, Speech, and Language Processing (TASLP): Special Issue on Processing Morphologically Rich Languages <http://www.signalprocessingsociety.org/publications/periodicals/taslp>, **July 2009**.
- **Attia, M., Rashwan, M., Ragheb, A., Al-Badrashiny, M., Al-Basoumy, H., Abdou, S.,** *A Compact Arabic Lexical Semantics Language Resource Based on the Theory of Semantic Fields*, Lecture Notes on Computer Science (LNCS): Advances in Natural Language Processing, Springer-Verlag Berlin Heidelberg [www.SpringerOnline.com](http://www.SpringerOnline.com), LNCS/LNAI; Vol. No. 5221 **Aug. 2008**.
- **Rashwan, M., Fakhr, M., Attia, M., El-Mahallawy, M.,** *Arabic OCR System Analogous to HMM-Based ASR Systems; Implementation and Evaluation*, Journal of Engineering and Applied Science, Cairo University, [www.Journal.eng.CU.edu.eg](http://www.Journal.eng.CU.edu.eg), Vol. 54 No. 6, pp. 653-672, **Dec. 2007**.
- **Attia, M., El-Mahallawy, M.,** *Histogram-Based Lines & Words Decomposition for Arabic Omni Font-Written OCR Systems; Enhancements and Evaluation*, Lecture Notes on Computer Science (LNCS): Computer Analysis of Images and Patterns, Springer-Verlag Berlin Heidelberg [www.SpringerOnline.com](http://www.SpringerOnline.com), LNCS; Vol. No. 4673 **Aug. 2007**.
- **Attia, M.,** *Arabic Orthography vs. Arabic OCR*, Multilingual Computing & Technology magazine [www.Multilingual.com](http://www.Multilingual.com), US, **Dec. 2004**.
- **Hifny, Y., Qurany, S., Hamid, S., Rashwan, M., Attia, M., Ragheb, A., Khallaaf, G.,** *ArabTalk<sup>®</sup>; An Implementation for Arabic Text To Speech System*, News Letter of Evaluation of Language Resources and Distribution Agency (ELDA) [www.ELDA.org](http://www.ELDA.org), France, **May 2004** issue.

### Conference Papers

- **(Being refereed, acceptance notification expected by Sept. 2009)**
- **Attia, M., Rashwan, M., El-Mahallawy, M.,** *Autonomously Normalized Horizontal Differentials as Features for HMM-Based Omni Font-Written OCR Systems for Cursively Scripted Languages*, IEEE International Conference on Signal & Image Processing Applications (ICSIPA09); <http://www.SP.ieeeMalaysia.org/ICSIPA09>, Kuala Lumpur-Malaysia, Nov. 2009.
- **Rashwan, M., Al-Badrashiny, M., Attia, M., Abdou, S.,** *A Hybrid System for Automatic Arabic Diacritization*, The Proceedings of the 2<sup>nd</sup> International Conference on Arabic Language Resources and Tools, Cairo - Egypt <http://www.MEDAR.info/conference/index.php>, **Apr. 2009**.

- **Attia, M., Rashwan, M., Ragheb, A., Al-Badrashiny, M., Al-Basoumy, H., Abdou, S.,** *A Compact Arabic Lexical Semantics Language Resource Based on the Theory of Semantic Fields*, 6<sup>th</sup> International Conference on Natural Language Processing, GoTAL2008, <http://www.cse.chalmers.se/gotal>, Gothenburg-Sweden, **Aug. 2008.**
- **Maegaard, B., Attia, M., Choukri, K., Krauwer, S., Mokbel, C., Yaseen, M.,** *MEDAR – Collaboration Between European and Mediterranean Arabic Partners to Support the Development of Language Technology for Arabic*, LREC2008 conference <http://www.lrec-conf.org/lrec2008>, Marrakech-Morocco, **May 2008.**
- **Attia, M., Rashwan, M., Ragheb, A., Al-Badrashiny, M., Al-Basoumy, H., A** *Compact Arabic Lexical Semantics Language Resource Based on the Theory of Semantic Fields*, LREC2008 conference <http://www.lrec-conf.org/lrec2008>, Marrakech-Morocco, **May 2008.**
- **Attia, M., El-Mahallawy, M.,** *Histogram-Based Lines & Words Decomposition for Arabic Omni Font-Written OCR Systems; Enhancements and Evaluation*, The 12<sup>th</sup> International Conference on Computer Analysis of Images and Patterns (CAIP 2007), hosted by the Vienna University of Technology, and organized by the Pattern Recognition and Image Processing (PRIP) Group; <http://www.prip.tuwien.ac.at/caip07/index.php>, Vienna-Austria, **Aug. 2007.**
- **Attia, M.,** *Anatomy of a Large-Scale Arabic Phonetic Transcriptor, and Application on Arabic Text-To-Speech* (long Arabic essay), Symposium on Information Technology and Arabic & Jurisprudent Sciences, College of Computer and Information Sciences, University of Al-Imam Muhammad Ibn Sa'ud; <http://www.imamu.edu.sa/ccsi/arabic/a-home.htm>, Riyadh-KSA, **Mar. 2007.**
- **Yaseen, M., Attia, M., Maegaard, B. ... et al.,** *Building Annotated Written and Spoken Arabic LR's in NEMLAR Project*, LREC2006 conference <http://www.lrec-conf.org/lrec2006>, Genoa-Italy, **May 2006.**
- **Attia, M., Rashwan, M., Khallaaf, G.,** *A Formalism of Arabic Phonetic Grammar and Application on the Automatic Arabic Phonetic Transcription of Transliterated Words*, Proceedings of the Arabic Language Technologies and Resources Int'l Conference; NEMLAR, Cairo-Egypt <http://www.elda.org/nemlar-conf>, **Sept. 2004**
- **Attia, M., Rashwan, M.,** *A Large-Scale Arabic POS Tagger Based on a Compact Arabic POS Tags Set, and Application on the Statistical Inference of Syntactic Diacritics of Arabic Text Words*, Proceedings of the Arabic Language Technologies and Resources Int'l Conference; NEMLAR, Cairo-Egypt <http://www.elda.org/nemlar-conf>, **Sept. 2004.**
- **Hifny, Y., Qurany, S., Hamid, S., Rashwan, M., Attia, M., Ragheb, A., Khallaaf, G.,** *ArabTalk<sup>®</sup>; An Implementation for Arabic Text To Speech System*, The proceedings of the 4<sup>th</sup> Conference on Language Engineering; CLE'2003, the Egyptian Society Of Language Engineering (ESOLE) <http://www.esole.org>, Cairo-Egypt, **Oct. 2003.**
- **Attia, M., Khallaaf, G.,** *On The Priorities of Arabic HLT Standards, Resources, and Tools Development*, The proceedings of the 4<sup>th</sup> Conference on Language Engineering; CLE'2003, the Egyptian Society of Language Engineering (ESOLE) <http://www.esole.org>, Cairo-Egypt, **Oct. 2003.**
- **Attia, M., Rashwan, M.,** *Stochastic Models, Statistical Disambiguation, & Applications On Arabic NLP Problems*, The proceedings of the 3<sup>rd</sup> Conference on Language Engineering; CLE'2002, the Egyptian Society of Language Engineering (ESOLE) <http://www.esole.org>, Cairo-Egypt, **Oct. 2002.**

## REVIEWS

- Member of the review committee of the Special Issue on Arabic Natural Language Processing (ANLP) - ACM Transactions on Asian Language Information Processing (TALIP), <http://www.acm.org/publications/journals>, <http://talip.acm.org> (review done in **June 2009**).
- Scientific referee in the *International Symposium on the Glorious Qur'an and Contemporary Technologies; Information Technology*; <http://www.QuranIT.org/remcs/cms> organized by King Fahd Qur'an Printing Complex, KSA, **Sept. 2009**. (review done on **Jan. 2009**)
- Technical evaluator of the technologies of *Arabic Textware* software house <http://www.ArabText.ws> Amman-Jordan, which was undergoing technical evaluation as part of an investment process by that time (**Jan. 2000**).

## TALKS & KEYNOTES

- (20 minutes) *Histogram-Based Lines & Words Decomposition for Arabic Omni Font-Written OCR Systems; Enhancements and Evaluation*, Oral Presentation in The 12<sup>th</sup> International Conference on Computer Analysis of Images and Patterns; **CAIP07**, hosted in the Vienna University of Technology, and organized by the Pattern Recognition and Image Processing (PRIP) Group; [http://www.prip.tuwien.ac.at/caip07/Program\\_detailed.htm](http://www.prip.tuwien.ac.at/caip07/Program_detailed.htm), Vienna-Austria, **Aug. 2007**.
- (30 minutes) *Anatomy of a Large-Scale Arabic Phonetic Transcriptor, and Application on Arabic Text-To-Speech*, Invited Speech in the **Symposium on Information Technology and Arabic & Jurisprudent Sciences**, College of Computer and Information Sciences, University of Al-Imam Muhammad Ibn Saud; <http://www.imamu.edu.sa/ccsi/arabic/a-home.htm>, Riyadh-KSA, **Mar. 2007**.
- (45 minutes) *On the Language Engineering R&D work in Egypt in-general and in RDI in-specific*, Invited Speech in the Data Modeling and Computational Linguistics track of **Infos2006**; the 4<sup>th</sup> int'l conference of the faculty of Computers and Informatics, Cairo Univ. <http://www.fci-cu.edu.eg/infos2006/index.php>, Cairo-Egypt, **Mar. 2006**.
- (45 minutes) *RDI's Human Language Technologies (HLT)*, Invited Speech in the 3<sup>rd</sup> *Conference on Language Engineering*; **CLE'2002**, organized by the Egyptian Society of Language Engineering (ESOLE) <http://www.esole.org>, Cairo, Egypt, **Oct. 2002**.
- (10 minutes) *Human Language Technologies (HLT) in Egypt and presenting RDI as an exemplar Arabic HLT emerging company*, SME Presentation in **Lang Tech 2002** <http://www.Lang-Tech.org> conference & exhibition on HLT industry; Berlin-Germany, **Sept. 2002**.

## CONFERENCE COMMITTEES MEMBERSHIP

- Scientific committee member/reviewer of *The 2<sup>nd</sup> Int'l Conference on Arabic Language Resources and Tools*, Cairo, Egypt, **Apr. 2009**. [http://www.medar.info/conference\\_all/2009/index.php](http://www.medar.info/conference_all/2009/index.php), [http://www.medar.info/conference\\_all/2009/organizers.php](http://www.medar.info/conference_all/2009/organizers.php).
- Organization committee member of *The 2<sup>nd</sup> Int'l Conference on Arabic Language Resources and Tools*, Cairo, Egypt, **Apr. 2009**. On behalf of RDI, the local organizing partner, I've fully been in charge of the various aspects of the local organization. [http://www.medar.info/conference\\_all/2009/index.php](http://www.medar.info/conference_all/2009/index.php), [http://www.medar.info/conference\\_all/2009/organizers.php](http://www.medar.info/conference_all/2009/organizers.php).

- Organization, and scientific committees member of the 5<sup>th</sup> *Conference on Language Engineering; CLE'2005*, Cairo, Egypt, **Sept. 2005**, organized by the Egyptian Society of Language Engineering (ESOLE) <http://www.esole.org>.
- Organization committee member of *NEMLAR's* Int'l conference on Arabic HLT <http://www.ELDA.org/NEMLAR-conf>, Cairo, Egypt, **Sept. 2004**. Representing RDI; the local organizing partner, I was in full charge of all aspects of the local organization.

## GRANTS FOR CURRENT RESEARCH PROJECTS

- Scientist in the consortium of the 30-month project of *Mediterranean Arabic Language and Speech Technologies; MEDAR*; [www.MEDAR.info](http://www.MEDAR.info).

This project runs under the EU's FP7 R&D grants programme; proposal submission #FP7-ICT-2007-1 on May 8<sup>th</sup>, 2007. It has been approved in Aug. 2007 with a total budget of 800,000 Euro. MEDAR has taken off in Feb. 1<sup>st</sup>, 2008 and it endures till June 2010.

- Senior researcher in the 3-year (Sept. 2005 to Aug. 2008) project of *Arabic Lexical Semantic Tagging* for sharpening Arabic text mining applications; <http://www.DMCM.elmadany.org/index.php?page=Stuff&id=Leading#Leading>.

This is one of the projects of the *Data Mining Center and Computer Modeling of Excellence*; <http://www.DMCM.elmadany.org/index.php>, established by the *Egyptian Ministry of Communications & Information Technology* (MCIT) and funded by the *United Nations Development Program* (UNDP). Project grant is 600,000 EGP (about 110,000 USD) over 36 months. << Contract no. 2005-077-12346 >>

This project has been awarded an extra 18-month extension (Oct. 2008 to May 2010) with an extra fund of 400,000 EGP (about 70,000 USD).

- Senior researcher in the 3-year project: *Improving the Research Potential of the Mediterranean Basin in the Area of Arabic Natural Language Processing* (MED-NLP), Work Programme: FP7-REGPOT-2-2009.

With academic partners from Greece, France, and Morocco, I represent the *Data Mining & Computer Modeling Center of Excellence* (DMCM-CoE); [http://www.MCIT.gov.eg/Centers\\_Excellence.aspx](http://www.MCIT.gov.eg/Centers_Excellence.aspx) whose share in the budget of this proposed project is 220,000 Euro. **Proposal evaluation is expected by June 2009.**

## PRIZES & AWARDS

- First prize in the **2007 World Summit Award** contest <http://www.wsis-award.org> for best e-content (e-Learning track). This int'l prize has been awarded for RDI's *Hafss*<sup>©</sup> technology for the interactive self-learning of spoken language applied on the Tajweed of the holy Qur'an. I have been the project manager of this technology from 2002 to 2004.
- e-Content Award's first prize <http://www.eContentAward.org.eg/winners.html> in the track of e-Learning from the Egyptian IT Industry Development Agency ITIDA, for RDI 's new technology for the self learning of spoken language applied on Tajweed; *Hafss*<sup>©</sup> **2006**. I have been the project manager of this technology from 2002 to 2004
- Best employee in RDI (after 360° evaluation of all the 100+ employees in RDI) over the years; **2001**, **2003**, and **2004**.
- *Best-of-GITEX*<sup>5</sup> **1996** award. RDI has got this prize for its - by then - novel CELP based speech compression technology deployed in its Qur'an encyclopedia including the whole "Tafseer of Sha'raawy", where I built the Arabic derivative search engine of this product.

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<sup>5</sup> GITEX is the Gulf IT Exhibition annually held in Dubai, UAE.

## TEACHING EXPERIENCE

- A co-supervisor of 2 M.Sc. theses on Arabic-supported Machine Translation in the Dept. of Computer Science - College of Computing & Information Technology - Arab Academy for Science & Technology and Maritime Transport (AAST-MT) [www.AAST.edu](http://www.AAST.edu).
- Designing and teaching the postgraduate course: *Introduction to Statistical Natural Language Processing* [http://www.RDI-eg.com/AAST\\_NLP\\_2008.htm](http://www.RDI-eg.com/AAST_NLP_2008.htm), M.Sc. degree program in the college of Computing & Information Technology, Arab Academy for Science & Technology and Maritime Transport (AAST-MT) [www.AAST.edu](http://www.AAST.edu); academic year 2008/2009.
- Teaching the undergraduate course of: *Object Oriented Programming* to the undergraduate students in the pre-final year at the college of Computing & Information Technology, Arab Academy for Science & Technology and Maritime Transport (AAST-MT) [www.AAST.edu](http://www.AAST.edu); academic year 2007/2008.
- Designing and teaching the undergraduate elective course: *Introduction to Natural Language Processing* at the Computer Science dept., College of Engineering, Arab Academy for Science & Technology and Maritime Transport (AAST-MT) [www.AAST.edu](http://www.AAST.edu); academic year 2005/2006.

## EDUCATION

**From 2001 to 2005:** PhD of Electronics & Electrical Communications, Faculty of Engineering, Cairo University, Egypt.

Thesis title: *Theory and Implementation of a Large-Scale Arabic Phonetic Transcriptor, and Applications.* (Sept. 2005)

**From 1996 to 2000:** M.Sc. degree of Computer Engineering, Faculty of Engineering, Cairo University, Egypt.

Thesis title: *A Large-Scale Computational Processor of the Arabic Morphology, and Applications.* (Feb. 2000)

**From 1990 to 1995:** B.Sc. of Electronics & Electrical Communications, Faculty of Engineering, Cairo University, Egypt.

Graduation project *The Cartoonist*<sup>6</sup>; a model-based animation package (The idea has been developed later into the *Flash*<sup>6</sup> technology by Macromedia Inc.). (July 1995)

## REFERENCE PERSONS

- **Prof. Mohsen A. A. Rashwan**<sup>6</sup> [Mohsen\\_Rashwan@RDI-eg.com](mailto:Mohsen_Rashwan@RDI-eg.com); professor in the dept. of Electronics and Electrical communications, Faculty of Engineering, Cairo University, Egypt. He is also the CEO of RDI; [www.RDI-eg.com](http://www.RDI-eg.com).
- **Prof. Bente Maegaard** [bMaegaard@hum.ku.dk](mailto:bMaegaard@hum.ku.dk); the director of Center for Sprogteknologi (Centre for Language Technology) [www.CST.ku.dk](http://www.CST.ku.dk), University of Copenhagen, Denmark. She is also the current president of the European Language Resources Association (ELRA) [www.ELRA.info](http://www.ELRA.info), Luxembourg.
- **Dr. Khalid Choukri** [Choukri@ELDA.org](mailto:Choukri@ELDA.org); the CEO of ELDA; Evaluations and Language resources Distribution Agency [www.ELDA.org](http://www.ELDA.org), Paris, France.

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<sup>6</sup> Prof. Rashwan, which is my PhD supervisor, has acquired a Master's degree from Carleton University, and a PhD from Queen's University both in Ontario, Canada.

- **Prof. M. Waleed T. Fakh<sup>7</sup>** [WaleedF@AAST.edu](mailto:WaleedF@AAST.edu); dean of the faculty of Computers and Informatics, Arab Academy for Science & Technology and Maritime Transport (AAST-MT); [www.AAST.edu](http://www.AAST.edu), Heliopolis-Cairo, Egypt.
  - **Dr. Tarek El-Abbad** [TarekEl@winse.Microsoft.com](mailto:TarekEl@winse.Microsoft.com); the managing director of Cairo Microsoft Innovation Center (CMIC) <http://www.Microsoft.com/middleeast/Egypt/CMIC>, Cairo, Egypt.
  - **Prof. Mohamed Maamouri** [Maamouri@LDC.uPenn.edu](mailto:Maamouri@LDC.uPenn.edu); Linguistic Data Consortium (LDC), University of Pennsylvania, [www.LDC.uPenn.edu](http://www.LDC.uPenn.edu), USA.
  - **Prof. Joseph Dichy** [Joseph.Dichy@Univ-Lyon2.fr](mailto:Joseph.Dichy@Univ-Lyon2.fr); professor of Arabic Linguistics in the dept. of Arabic Studies, Faculty of Languages, Université Lumière, Lyon, France.
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<sup>7</sup> Prof. Fakh<sup>7</sup> has acquired his PhD from Waterloo University, Waterloo, Ontario, Canada.