

# Ahmed M. H. ABDEFATTAH

Full Name: **Ahmed Mohammed Hassan Abdelfattah**

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## Education:

Mar. 2014 **PhD – Artificial Intelligence**, *IKW, University of Osnabrück*, Germany, [1].

Oct. 2005 **MSc – Computer Science**, *Faculty of Science, Ain Shams University*, Egypt, [2].

Jun. 1998 **BSc – Pure Mathematics & Computer Science**, *Ain Shams University*, Egypt.

Languages: **Arabic** (Native / Mother tongue) – **English** (Excellent / The daily working language) – **German** (Good competency / Goethe-Zertifikat B2)

## Employment: (Academic)

Oct. 2020– present **Assistant Professor**, *Faculty of Computer Science & Engineering, King Salman International University (KSIU)*, Sinai, Egypt.

Jun. 2014– present **Assistant Professor**, *Department of Mathematics, Faculty of Science, Ain Shams University (ASU)*, Cairo, Egypt.

Aug. 2018– Jul. 2020 **Visiting Assistant Professor**, *Computer Science Department, State University of New York (SUNY)*, Oswego, NY, USA.

Sep. 2015– Jul. 2017 **Adjunct Assistant Professor**, *Faculty of Informatics and Computer Science, the British University in Egypt (BUE)*, Cairo, Egypt.

Jan. 2015– Jul. 2015 **Adjunct Assistant Professor**, *Faculty of Engineering, Cairo University (CU)*, Cairo, Egypt.

Oct. 2010– Jun. 2014 **Teaching & Research Assistant**, *Institute of Cognitive Science (IKW), University of Osnabrück*, Osnabrück, Germany.

Oct. 2005– May 2009 **Teaching Assistant**, *Mathematics Department, the Faculty of Engineering, the German University in Cairo (GUC)*, New Cairo City, Egypt.

Oct. 1998 **Teaching Assistant**, *Faculty of Science, Ain Shams University (ASU)*, Cairo, Egypt.

## Funded Projects:

### ○ *eGenAR*: **Smart Generation of Objects in Augmented Reality via Feature Identification of Hand-free Sketches in Metric Spaces.**

Partner(s): Mathematics Department, Faculty of Science, Ain Shams Univ. (Egypt).

Budget: £100,000 Agency: ASRT Role: **P.I.**

Status: Ongoing (12 months; August-2020 to July-2021).

### ○ *JeSICS+*: **Joint development of E-Learning Services for Interdisciplinary Computing Studies.**

Partner(s): Uni. Osnabrück (Germany) / Faculty of Science, Ain Shams Univ. (Egypt).

Status: Ongoing (24 months; Mar.2019 to Feb.2021).

Budget: €186,000 Agency: DAAD (Project-ID: 57477524) Role: **P.I.**

### ○ *JeSICS*: **Establishment of the Interdisciplinary & Cognitive Studies Research Group and Laboratory.**

Partner(s): Uni. Osnabrück (Germany) / Faculty of Science, Ain Shams Univ. (Egypt).

Status: Completed (3 years; January 2016 to December 2018).

Budget: €240,000 Agency: DAAD (Project-IDs: 57247603, & 57404304) Role: **P.I.**

### ○ **The Joint Exploratory Society for Interdisciplinary and Computational Studies.**

Partner(s): Uni. Osnabrück (Germany) / Faculty of Science, Ain Shams Univ. (Egypt).

Status: Completed (12 months; January 2015 to December 2015).

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## Committees and Duties: (Research)

- 2017–2019 **Reviewing Committee**, *The 39<sup>th</sup> /40<sup>th</sup> /41<sup>st</sup> Annual Meetings of the Cognitive Science Society*, (CogSci2017–2020), <http://www.cognitivesciencesociety.org/>.
- 2017–2020 **Organizing Committee**, *The First, Second, and Third Interdisciplinary Spring Schools for Studies on Intelligence and Cognition (6COOL)*, Cairo, Egypt, [j6project.wordpress.com](http://j6project.wordpress.com)  
<https://youtu.be/OCNroYD6aSo>.
- 27 Sep. 2016 **Organizing Committee**, *Dynamics of Sketching & Sketch Understanding (DySket)*, Bremen, Germany, <http://kogwis2016.spatial-cognition.de/node/15>.
- 5–7 May 2016 **Reviewing Committee**, *The 1<sup>st</sup> Workshop on Early Classification of Complex Events*, Florida, USA, <http://sites.google.com/site/ecsdm16/>.
- 31 Jul. 2013 **Chair / Organizing Committee**, *Formalizing Mechanisms for Artificial General Intelligence and Cognition (FormalMAGiC-13)*, Beijing, China, <http://cogsci.uni-osnabrueck.de/~formalmagic/>.

## Supervision: (Theses):

- PhD Thesis: “*Recognizing Sketched Objects by Learning their Geometrical Features*”; Researcher: Mahmoud Mohamed Abdelhamied. Status: Ongoing.
- MSc Thesis: “*On Problems of Analogy-Based Representation and Learning*”; Researcher: Nohayr Muhammad Abdelmoneim. Status: Ongoing.
- MSc Thesis: “*Formal Concept Analysis and its Applications in Concept Mining and Recognition*”; Researcher: Nermeen Ali Elsaadany. Status: Ongoing.

## Selected Contributions: (Publication)

- [1] Ahmed M. H. **Abdelfattah**. *Utilizing Cross-Domain Cognitive Mechanisms for Modeling Aspects of Artificial General Intelligence*. PhD thesis, University of Osnabrück, March 2014.
- [2] Ahmed M. H. **Abdelfattah**. Graph algorithms and their applications. Masters dissertation, Faculty of Science, Ain Shams University, Cairo, 2005.
- [3] Mahmoud M. Abdelhamied, Yasser M. Abd El-Latif, Ahmed **Abdelfattah**, and Fayed M. Ghaleb. A Novel Method for Recognizing Sketched Objects by Learning Their Geometrical Features. *J. of Env. Sci., CS, and Eng (JECET)*, 9(2):214–223, 2020.
- [4] Ahmed M. H. **Abdelfattah** and Ulf Krumnack. Semantics of Analogies from a Logical Perspective. *KI - Künstliche Intelligenz*, 33(3):243–251, Sep 2019.
- [5] Nashwa Abdelghaffar, Ahmed **Abdelfattah**, Azza Taha, and Soheir Khamis. Accentuating Features of Description Logics in High-Level Interpretations of Hand-Drawn Sketches. *KI - Künstliche Intelligenz*, 33(3):253–265, Sep 2019.
- [6] Rania Mohamed, Nourhan Abu-Shahba, Marwa Mahmoud, Ahmed **Abdelfattah**, Wael Zakaria, and Mahmoud ElHefnawi. Co-regulatory network of oncosuppressor mirnas and transcription factors for pathology of human hepatic cancer stem cells (hcsc). *Scientific Reports*, 9(1):55–64, 2019.
- [7] Ahmed M. H. **Abdelfattah** and Wael Zakaria. Employing a restricted set of qualitative relations in recognizing plain sketches. In Gabriele Kern-Isberner, Johannes Fürnkranz, and Matthias Thimm, editors, *KI 2017: Advances in Artificial Intelligence*, volume 10505 of *Lecture Notes in Artificial Intelligence*, pages 3–14, 2017.
- [8] M. Martinez, A. M. H. **Abdelfattah**, U. Krumnack, D. Gómez-Ramírez, A. Smaill, T. R. Besold, A. Pease,

M. Schmidt, M. Guhe, and K.-U. Kühnberger. Theory blending: extended algorithmic aspects and examples. *Annals of Mathematics and Artificial Intelligence*, 80(1):65–89, 2017.

- [9] Ahmed M. H. **Abdelfattah**, Wael Zakaria, Nashwa Abdelghaffar, Nohayr Abdelmoneim, Stefan Schneider, and Kai-Uwe Kühnberger. A Preliminary Assessment of the Role of Conceptual Saliency in Automatic Sketching. In Antonio Lieto, Mehul Bhatt, Alessandro Oltramari, and David Vernon, editors, *Proceedings of the 4th International Workshop on Artificial Intelligence and Cognition*, volume 1895, pages 81–92. CEUR-WS, 2016.
- [10] M. Martinez, U. Krumnack, A. Smaill, T. R. Besold, A. **Abdelfattah**, M. Schmidt, H. Gust, K.-U. Kühnberger, M. Guhe, and A. Pease. Algorithmic aspects of theory blending. *Proceedings of the 12th International Conference on Artificial Intelligence and Symbolic Computation (AISC)*, G. Aranda-Corral, F. Martin-Mateos, and J. Calmet, Eds., LNAI, Springer, 2014.
- [11] Ahmed M. H. **Abdelfattah** and Ulf Krumnack. Creating Analogy-Based Interpretations of Blended Noun Concepts. In *AAAI Spring Symposium: Creativity and (Early) Cognitive Development*, volume SS-13-02 of *AAAI Technical Report*. AAAI, 2013.
- [12] Ahmed M. H. **Abdelfattah**, Ulf Krumnack, and Kai-Uwe Kühnberger. The Importance of Two Cognitive Mechanisms in Analyzing Counterfactuals: An Implementation-Oriented Explication. In *Advances in Cognitive Systems, Baltimore, Maryland, USA, December 12-14, 2013*, 2013.
- [13] Ahmed M. H. **Abdelfattah** and Stefan Schneider. Back-and-forth inception: Towards a cognitively-inspired model of concept construction via conceptual intellection. In *Proceedings of the Workshop “Computational Creativity, Concept Invention, and General Intelligence”, C3GI at IJCAI 2013*, 2013.
- [14] Ahmed M. H. **Abdelfattah**, Tarek R. Besold, Helmar Gust, Ulf Krumnack, Martin Schmidt, Kai-Uwe Kühnberger, and Pei Wang. Rationality-Guided AGI as Cognitive Systems. In *Proc. of the 34th annual meeting of the Cognitive Science Society*, pages 1242–1247, 2012.
- [15] Maricarmen Martínez, Tarek Besold, Ahmed M. H. **Abdelfattah**, Kai-Uwe Kühnberger, Helmar Gust, Martin Schmidt, and Ulf Krumnack. Towards a Domain-Independent Computational Framework for Theory Blending. In *AAAI Fall Symposium: Advances in Cognitive Systems*, volume FS-11-01 of *AAAI Technical Report*, pages 210–217. AAAI, 2011.
- [16] Ahmed M. H. **Abdelfattah**, Ulf Krumnack, and Kai-Uwe Kühnberger. Utilizing Cognitive Mechanisms in the Analysis of Counterfactual Conditionals by AGI Systems. In Kai-Uwe Kühnberger, S. Rodolph, and Pei Wang, editors, *Proc. of the 6th Conference on Artificial General Intelligence, Beijing*, volume 7999 of *Lecture Notes in Computer Science*, pages 1–10. Springer-Verlag Berlin Heidelberg, 2013.

## Previously Taught Courses: (Teaching)

CU, GUC, BUE *Discrete Mathematics and its Applications.*

ASU, GUC *Linear Algebra.*

GUC, BUE *Calculus and Advanced Calculus.*

GUC, BUE *Numerical Methods for Engineers.*

ASU *Graph Theory and Combinatorial Optimization.*

GUC *Introduction to Probability & Statistics.*

MIU *Mathematics for Business.*

ASU, SUNY *Theory of Computability and Complexity.*

ASU, SUNY *Fundamentals of Computer Science.*

ASU, SUNY, IKW *Methods of Artificial Intelligence.*

ASU *Object-Oriented Programming in C++.*

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- ASU *Digital Logic and Circuit Design.*
- ASU *Data Structures and Algorithms.*
- ASU *Introduction to Computer Programming.*
- ASU *Graph Algorithms and their Applications.*
- SUNY *Computational Models of Cognitive Processes.*
- SUNY *Introduction to Cognitive Neuroscience.*

## Training, Soft Skills, & Multicultural Experiences:

- Jul. 2019 **"Intercultural Competencies"**, (*Lisa Hollands, UOS*), Osnabrück, Germany.
- May. 2019 **UUP Training Workshop: "Effective Interpersonal Communication"**, (*UUP*), SUNY Oswego, Oswego, NY, USA.
- Jul. 2018 **Strategic Planning for Universities and Educational Institutions**, *Training & Development Centre (TDC)*, Ain Shams University, Cairo, Egypt.
- Feb. 2018 **Scientific Storytelling: Science & Journalism Workshop**, *ONA Academy*, Cairo, Egypt.
- Feb. 2018 **Workshops & Conferences Organization**, *Training & Development Centre (TDC)*, Ain Shams University, Cairo, Egypt.
- Dec. 2017 **A Precursory Program in Management and Economics**, *Shiekh El-Amoud*, Cairo, Egypt.
- May. 2016 **Marketing for Higher Education**, *DAAD Kairo Akademie (DKA)*, Cairo, Egypt.
- Dec. 2014 **Capacity Building in Higher Education (National Erasmus<sup>+</sup> Workshop)**, *Faculty of Agriculture, Cairo University*, Cairo, Egypt.
- Sep. 2014 **Forming and Managing Research Teams**, *Training & Development Centre (TDC)*, Ain Shams University, Cairo, Egypt.
- Dec. 2011 **Writing Success Promising Proposals**, *International DAAD Academy (iDA)*, Bonn, Germany.
- Jul. 2009 **Time Management and Team Working**, *DAAD soft-skills workshop series*, Cairo, Egypt.

### Membership of Professional Bodies

- o *AAAI*, the Association for the Advancement of Artificial Intelligence.
- o *The Egyptian Mathematical Society (ETMS)*, Egypt.
- o *The German Society for Cognitive Science (GK)*, Germany.

### Social (Visited Countries)



- 2009–2020 **Germany**, (*several places*), (multiple activities).
- 2019 **Netherlands**, *Enschede*, University of Twente (lecturer invitation).
- 2018 **USA**, *New York*, State University of New York at Oswego (visiting assistant professor).
- 2013 **China**, *Beijing*, Beijing University & Tsinghua University, (AGI-13, IJCAI-13, & FormalMagic).
- 2012 **Iceland**, *Reykjavik*, (Artificial General Intelligence & Constructivist A.I. Summer School).
- 2012 **France**, *Montpellier*, (The European Coordination Committee for Artificial Intelligence).
- 2010 **Netherlands**, *Amsterdam*, (ICCS 2010).
- 2007 **USA**, *New York*, State University of New York at Buffalo (visiting scholar).

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## Invited Talks / Presentations:

- 16/06/2020 **Intercultural learning and interaction in remote teaching sessions**, *Good Practices & Examples: JESICS+*, DAAD Webinar Series Digital Formats in International HE Projects, (watch vid) or (view prezi).
- 13/12/2019 **Computational Models of Cognitive Processes**, *Course Organization, Forms, & Activities*, Faculty of Electrical Engineering, Mathematics, and CS (EEMCS), University of Twente, Enschede, Netherlands, (invited lecturer).
- 11/07/2019 **An Invitation to Cognitive Sciences**, *The Mathematics Summer School for Distinguished Egyptian Students*, The Egyptian Mathematical Society (ETMS), Faculty of Science, Cairo University, Egypt, (General lecture).
- 3/4/2018 **JeSICS Role in Mobility & Internationalization**, *The Emergence of Interdisciplinary Computing*, The 7<sup>th</sup> Annual International Conference of ASU, Cairo, Egypt, (Basic Sciences session; cf. <http://asuconference.asu.edu.eg/>).
- 28/09/2017 **Employing a Restricted set of Qualitative Relations in Recognizing Plain Sketches**, *The 40<sup>th</sup> German Conference on Artificial Intelligence*, (KI-2017), Dortmund, Germany, (Technical paper at KI-2017; cf. [7] and [http://youtu.be/Hx5oTATqS\\_w](http://youtu.be/Hx5oTATqS_w)).
- 21/07/2017 **Towards the Recognition of Sketches by Learning Common Qualitative Representations**, *The 2<sup>nd</sup> Symposium on Problem-solving, Creativity and Spatial Reasoning*, (ProSocrates2017), Delmenhorst, Germany .
- 10/10/2015 **The Importance of Interdisciplinarity in Knowledge-based Educational Societies**, *Towards a Knowledge Society? Strategies and Challenges for the 21<sup>st</sup> Century*, Bibliotheca Alexandrina, Egypt.
- 02/08/2013 **Utilizing Cognitive Mechanisms in the Analysis of Counterfactual Conditionals by AGI Systems**, *The 6<sup>th</sup> Conference on Artificial General Intelligence*, (AGI-13), Beijing, China, (cf. <http://youtu.be/Pdoll-XQ4Zw>, [16]).
- 31/07/2013 **Model Construction in General Intelligence**, *The 6<sup>th</sup> Conference on Artificial General Intelligence*, (AGI-13), Beijing, China, (cf. <http://youtu.be/SID8vIjiNZU>).

## Scientific Activities & Events: (Other)

- **Concepts in Action: Representation, Learning and Application (CARLA summer school)**, 6–12 August 2018, *Osnabrück, Germany*.
- **The Second Symposium on Problem-solving, Creativity and Spatial Reasoning (ProSocrates2017)**, 20–21 July 2017, *Delmenhorst, Germany*.
- **Dynamics of Sketching & Sketch Understanding (DySket)**, 27 September 2016, *Bremen, Germany* [organizing committee; <http://kogwis2016.spatial-cognition.de/node/15>].
- **The 13<sup>th</sup> Biannual Meeting of the German Society for Cognitive Science (KogWis2016)**, 26–30 September 2016, *Bremen, Germany*.
- **Interdisciplinary College (IK-2016): Transitions and Transformations in Cognition, Biology, and Interactive Systems**, March 2016, *Möhnesee-Günne, Germany*.
- **Second Annual Conference on Advances in Cognitive Systems**, December 2013, *Baltimore, Maryland, USA* (cf. [12]).
- **AAAI Spring Symposium: Creativity and (Early) Cognitive Development**, March 2013, *California, USA* (cf. [11]).
- **Artificial General Intelligence & Constructivist A.I.**, Summer School: 1–15 August 2012, *Reykjavik, Iceland*.
- **The 10<sup>th</sup> Biannual Meeting of the German Society for Cognitive Science (KogWis2010)**, October 2010, *Potsdam, Germany*.
- **ICCL Summer School(s), TUD**, September 2008 and September 2010, *Dresden, Germany*.

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## Awards:

- Mar. 2016 **Personal equipment grant award**, €10,000, Centrum für internationale Migration und Entwicklung CIM (returning experts), Germany.
- Nov. 2013 **The DAAD Prize for International PhD Students**, €1,000, International Students Office, the University of Osnabrück, Germany.
- Aug. 2013 **The IJCAI Travel Grant Program**, €400, IJCAI-2013, China.
- Mar. 2012 **CADIA: Constructivist AGI Summer School**, €850, Icelandic Institute of Intelligent Machines, Iceland.
- Jul. 2011 **Solomonoff Student Award, AGI-2011**, €1,000, Google, USA.
- Sep. 2009 **DAAD-GERLS 2009 program: Full-PhD Scholarship award**, €1,000 (*monthly for 42 months*), The DAAD, Germany.
- Jan. 2007 **ParOwn-0706 program: visiting research**, €700 (*monthly for 6 months*), The Egyptian Ministry of Higher Education (MHESR), Egypt.

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## Society/Community Involvement:

Social & Intercultural (*Volunteering, Mentoring, Leading, & NPOs*)

- Volunteer: "Egypt Scholars", Takamol project (see <http://egyptscholars.org/en/team/ahmed-abdel-fattah>).
- Group leader: "GERLS Orientierungsseminar", DAAD gathering, Bonn, Germany (14–15 Feb 2013).
- Mentor "Intercultural Student Mentoring Program", Cognitive Science Department, University of Osnabrück, Germany (July-2012 to June-2014).
- Mentor "Lab-rotation program", AI Group, Uni. of Osnabrück, Germany (Jan-2013 to June-2014).
- Talk: "B-Ware & Ready", DAAD-Scholarship holders meeting, Osnabrück, Germany (26 November 2010).
- Volunteer: "Lifeboat foundation", (see <http://lifeboat.com/ex/about>).

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## Computer Skills/Tools:

- o Structured programming (C, Pascal); Logic programming (Prolog); OOP (C++, Python); Event-driven & Visual programming (Visual Basic, Visual C++).
- o Database Management Systems (Oracle Developer, Oracle DBA, MS Access, and MySQL).
- o Web-design; Software applications; Operating systems: Windows and Mac OS X.

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## Work Experience: (Software Training & Development)

- Jun. 2002–**Instructor**, *ICL-Egypt*, Giza, Egypt.  
Sep. 2002 Instructor of the Oracle<sup>®</sup>i-DBA Master track courses.
- Jan. 2002–**Instructor**, *RAyA Academy*, Giza, Egypt.  
May 2002 Instructor of both DBMS applications and OOP in C++ track courses.
- Nov. 2000–**Developer/Trainer**, *CompuStar.Net centers*, Cairo/Alexandria, Egypt.  
Jun. 2001 Developer and trainer of Visual Basic programming and Microsoft Access database.
- Jul. 1998–**Developer**, *Crystal Mind Software Co.*, Nasr City, Egypt.  
Oct. 2000 Developing financial software tools using Delphi.

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## List of References:

(*Available upon request*)

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