

# Omar AlZoubi

E-mail : [oaalzoubi@just.edu.jo](mailto:oaalzoubi@just.edu.jo)

Website: <https://sites.google.com/site/omaralzoubiusyd/ho>

## Nationality

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- Jordan

## Summary

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- Research interests: Pattern Recognition & Machine Learning, Affective Computing, Intelligent Tutoring Systems, Computer Science Education, and Educational Data Mining.
- Good background in computer science, mathematics, and statistics.
- Good communication and problem solving skills.
- Effective team work.

## Objective

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To find a challenging job that fulfills my education and experience. A job that allows me to make a difference on some real-world challenging technological problems.

## Work experience

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### Jordan University of Science & Technology

01/2018 — now

Assistant Professor

- Teaching a variety of computer science courses for undergraduate students, such as Object Oriented Programming using C++, and Data Structures.

### Yarmouk Univeristy- Jordan

9/ 2016 — 01/2018

Assistant Professor

- Teaching a variety of computer science courses for undergraduate students, such as Programming languages, Operating systems, and visual programming.

### Ecole des Mines de Douai /France

1/2016 — 9/2016

Postdoctoral Researcher

#### Job Description

- Working on a project titled: *"Intelligent, Self-Adaptive and on-line fault diagnosis of systems evolving in complex and strongly non-stationary environments"*.

### Carnegie Mellon University in Qatar

11/2012 — 11/2015

Postdoctoral Research Associate

#### Job Description

- Working on a project for building a new Intelligent Tutoring System called ChiQat that teaches introductory data structures and recursion to CS students.
- Co-Teaching for 15-110 Principles of Computing course
- Assisting in various activities within the campus, such as open days, students' competitions.

Tutor

#### Job Description

- Tutoring for ELEC1805 (Professional Engineering and IT)/ S1/2011.
- Tutoring for ELEC 2103 (Simulation & Numerical Solutions in Engineering). Using MATLAB software for solving engineering problems in (Mathematics, Electronics, and Circuits analysis).

School of Electrical and Information  
Engineering, The University of Sydney.

10/2008 — 12/2008

Research Assistant

#### Job Description

- Performing data mining and clustering on data from student's surveys for the faculty of electrical and information engineering. The analysis aimed to link between the clustered data and any pitfalls in the design of these surveys. This helps in designing proper survey templates that can capture more accurate students' feedback.

## Education

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Ph.D. in Computer Science/Artificial  
Intelligence

08/2008 — 09/2012

The University of Sydney, Australia.

**Thesis:** "Automatic Affect Detection from Physiological Signals: Practical Issues"

MIT, Master of Information Technology

03/2007 — 08/2008

The University of Sydney, Australia

B.Sc. in Computer Science

09/1993 — 09/1997

Yarmouk University, Jordan

## Awards

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- Research Conversazione 2010 ResMed prize for research project in Biomedical Engineering". At the research conversazione 2010, organized by the faculty of Engineering and Information Technologies, The University of Sydney.
- The Best Research Project for Next Generation Application (Computing)". At the 2009 research conversazione, organized by the faculty of Engineering and Information Technologies, The University of Sydney. Prize sponsored by IBM Australia Limited.
- Norman I price scholarship, The school of Electrical and Information Engineering, The University of Sydney.
- Artificial Intelligence in Education Conference (AIED 2011) travel award.

## Memberships

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- Institute of Electrical and Electronics Engineers IEEE.
- International Artificial Intelligence in Education Society IAIED.
- Australian Computer society (ACS)

## Other Activities

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- Reviewer of Computers in Biology and Medicine.

- Reviewer of IEEE Transactions on Signal Processing.
- Reviewer of IEEE Transactions on Affective Computing.
- Reviewer of IEEE Transactions on Learning Technologies
- Reviewer of International Journal of Distance Education Technologies.
- Program committee member of several conferences (Affective Computing and Intelligent Interactions ACII2011, the 24th Florida Artificial Intelligence Research Society Conference (FLAIRS-24), and the 25th Florida Artificial Intelligence Research Society Conference (FLAIRS-25), Educational Data Mining EDM 2013, ACII 2013 and, EDM 2014.

## Skills

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- **Programming Languages:** JAVA, Python, C/C++, MATLAB, SQL, , R, and Assembly.
- **Software:** Latex, SPSS, WEKA, Minitab
- **Industry Certificates:** MCP 2003, MCP XP

## Publications

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### Journal Articles:

- AlZoubi, O., Fossati, D., D'Mello, S., & Calvo, R. (2015). Affect detection from non-stationary physiological data using ensemble classifiers. *Evolving Systems* 6 (2), 79-92, Springer.
- AlZoubi, O., D'Mello, S., & Calvo, R. A. (2012). Detecting Naturalistic Expressions of Nonbasic Affect Using Physiological Signals. *IEEE Transactions on Affective Computing* 3(3), 298-310.

### Book chapters:

- O. Alzoubi, S. Hussain, RA Calvo. (To Appear). "Affect-Aware Assistive Technologies" in *Assistive Technology for Cognition*, B. O'Neil and A. Gillespie [Eds], Psychology Press series *Current Issues in Neuropsychology*, Series Editor, Jon Evans, University of Glasgow.

### Conference papers:

- AlZoubi, O., Fossati, D., Eugenio, B. D., Green, N. (2014). ChiQat: an Intelligent System for Learning Recursion. The Second Workshop on AI-supported Education for Computer Science (AIEDCS 2014).
- AlZoubi, O., Fossati, D., D'mello, S., & Calvo, R. A. (2013). Affect Detection and Classification from the Non-stationary Physiological Data. In *Machine Learning and Applications (ICMLA), 2013 12th International Conference on* (Vol. 1, pp. 240-245). IEEE.
- AlZoubi, O., Fossati, D., Eugenio, B. D., Green, N., & Chen, L. (2013). Predicting Students' Performance and Problem Solving Behavior from iList Log Data. Paper presented at The 21st International Conference on Computers in Education (ICCE 2013), Denpasar Bali, Indonesia.
- Di Eugenio, B., Chen, L., Green, N., Fossati, D., & AlZoubi, O. (2013). Worked Out Examples in Computer Science Tutoring, *Artificial Intelligence in Education (AIED 2013)*, pp. 852-855: Springer.
- AlZoubi, O., Hussain, M., D'Mello, S., & Calvo, R. (2011). Affective Modeling from Multichannel Physiology: Analysis of Day Differences. In S. D'Mello, A. Graesser, B. Schuller & J.-C. Martin (Eds.), *Affective Computing and Intelligent Interaction* (Vol. 6974, pp. 4-13): Springer Berlin / Heidelberg.
- Rafael A. Calvo, M. S. Hussain, P. A. Pour, O. AlZoubi (2011) Siento: an experimental platform for behavior and psychophysiology in HCI. Fourth bi-annual International Conference of the HUMAINE Association on Affective Computing and Intelligent Interaction (ACII2011), Memphis, USA, October 2011 (Springer LNCS 6975).
- Hussain, M., AlZoubi, O., Calvo, R., & D'Mello, S. (2011). Affect Detection from Multichannel Physiology during Learning Sessions with AutoTutor. In G. Biswas, S. Bull, J. Kay & A. Mitrovic (Eds.), *Artificial Intelligence in Education* (Vol. 6738, pp. 131-138): Springer Berlin / Heidelberg.
- Pour, P. A., Hussein, S., AlZoubi, O., D'Mello, S. K., & Calvo, R. (2010). The impact of system feedback on learners' affective and physiological states. Paper presented at the 10th International Conference, ITS 2010, Pittsburgh, PA, USA,

June 14-18, 2010, Proceedings, Part I.

- AlZoubi, O., Calvo, R., & Stevens, R. (2009). Classification of EEG for Affect Recognition: An Adaptive Approach. In A. Nicholson & X. Li (Eds.), *AI 2009: Advances in Artificial Intelligence* (Vol. 5866, pp. 52-61): Springer Berlin / Heidelberg.
- AlZoubi, O., Koprinska, I., & Calvo, R. A. (2008). Classification of Brain-Computer Interface Data. In J. F. Roddick, J. Li, P. Christen & P. J. Kennedy (Eds.), *Proc. Seventh Australasian Data Mining Conference (AusDM 2008)* (Vol. CRPIT, 87, pp. 123-131). Glenelg, South Australia: ACS.
- Pour, P. A., Gulrez, T., AlZoubi, O., Gargiulo, G., & Calvo, R. A. (2008). Brain-computer interface: Next generation thought controlled distributed video game development platform. Paper presented at the Computational Intelligence and Games, 2008. CIG '08. IEEE Symposium On.

## References

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**Name:** Dr. Davide Fossati  
**Title:** Assistant Professor  
**Employer:** Computer Science, Carnegie Mellon University in Qatar  
**Contact:**  
**T:** +974 4454 8668+974 4454 8668  
**Email:** dfossati@cmu.edu

**Name:** Dr. Irena Koprinska  
**Title:** Associate Professor  
**Employer:** School of Information Technology, The University of Sydney  
**Contact:**  
**T:** +61 2 9351 3764  
**F:** +61 2 9351 3838  
**Email:** Irena.Koprinska@sydney.edu.au

**Name:** Dr. Barbara Di Eugenio  
**Title:** Professor  
**Employer:**  
Computer Science  
University of Illinois at Chicago, Chicago, IL  
**Contact:**  
**T:** (+1) 312-996-7566  
**Email:** bdieugen@uic.edu  
**Web:** <http://www.cs.uic.edu/~bdieugen/>

**Name:** Dr. Sidney D'Mello  
**Title:** Assistant Professor  
**Employer:** Departments of Psychology and Computer Science at the University of Notre Dame.  
**Contact:**  
**T:** +1 (901)-378-0531+1 (901)-378-0531  
**F:** +1 (574) 631-9260  
**Email:** sdmello@nd.edu

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## Best Publications List

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1- **AlZoubi, O.**, Calvo, R., & Stevens, R. (2009). *Classification of EEG for Affect Recognition: An Adaptive Approach* . In A. Nicholson & X. Li (Eds.), *AI 2009: Advances in Artificial Intelligence* (Vol. 5866, pp. 52-61): Springer Berlin / Heidelberg.

**Outlet ranking:** CORE conference rankings level B.

**Significance and impact:** This paper investigates the possibility of using EEG brain signals for the detection of 10 discrete affective states (no emotion, anger, hate, grief, platonic love, romantic love, joy, reverence, good learning, and bad learning) using classification and pattern recognition techniques. The study investigates how to employ intelligent computational methods in the form of an adaptive classification algorithm, which could potentially enhance affect detection. EEG data is a time-varying non-stationary data source, so we hypothesize that adaptive classification techniques will enhance the rate of affect detection compared to static classifiers.

This paper has received 41 citations since it was published.

2- Hussain, M., AlZoubi, O., Calvo, R., & D'Mello, S. (2011). *Affect Detection from Multichannel Physiology during Learning Sessions with AutoTutor*. In G. Biswas, S. Bull, J. Kay & A. Mitrovic (Eds.), *Artificial Intelligence in Education* (Vol. 6738, pp. 131-138): Springer Berlin / Heidelberg.

**Outlet ranking:** CORE conference rankings level A.

**Significance and impact:** Previous research on affect detection has mostly focused on detecting either basic emotions or arousal/valence levels in many laboratory contexts. This study attempts to expand the scope of previous work on physiology-based affect detection in a number of ways. First is by developing models that detect eight naturally occurring contextually relevant affective states that ensue from interactions with an intelligent tutoring system (AutoTutor). A different set of affective states are prominent in learning contexts (e.g., confusion, frustration), so this work contributes to a physiology-based automated detection of several non-basic emotions. Second is constructing both user-dependent and user-independent models, and comparatively consider accuracy rates associated with each using between-participants and within-participants cross-validation techniques. Third is providing a systematic analysis on multi-channel affective physiological data utilizing two feature selection methods and nine classification techniques.

This paper has received 25 citations since it was published.

3- AlZoubi, O., D'Mello, S., & Calvo, R. A. (2012). Detecting Naturalistic Expressions of Nonbasic Affect Using Physiological Signals. *IEEE Transactions on Affective Computing* 3(3), 298-310.

**Outlet ranking:** Impact factor SJR (3.5), source: Scopus .

**Significance and impact:** Although several theories of emotion focus on categorical models, which posit discrete emotions such as fear, anger, etc., the concept, the value, and even the existence of such 'labelled' states is still a matter of considerable debate. Therefore, one aim of this study is to provide a mapping of a set of discrete learning-centred affective states into dimensional models (valence/arousal) during learning interactions with AutoTutor. Learners were asked to provide both self-report ratings. This mapping may provide a better understanding of the relationship between the two models; allow comparisons of results from different studies that employed these two models. It can also facilitate the development of alternative models that integrate both models, which could enhance the recognition rates of affective states that occur during learning sessions.

This paper has received 16 citations since it was published.

4- Alzoubi, O., Hussain, M., D'Mello, S., & Calvo, R. (2011). *Affective Modeling from Multichannel Physiology: Analysis of Day Differences*. In S. D'Mello, A. Graesser, B. Schuller & J.-C. Martin (Eds.), *Affective Computing and Intelligent Interaction* (Vol. 6974, pp. 4-13): Springer Berlin / Heidelberg.

**Outlet ranking:** CORE conference rankings level C.

**Significance and impact:** Day variation in physiological data represents a major problem for building reliable classification models that span multiple days. This is because classification methods assume that training data is obtained from a stationary distribution. In real world contexts, however, this assumption of stationarity does not always hold. Every real-world classification system should be equipped with a mechanism to adapt to the changes in the environment. Understanding changes to the classification environment is essential for developing effective physiology-based automatic affect detectors that can be deployed in real world affective computing applications. There is a critical need for basic research on how physiological signals vary over time before effective solutions can be proposed. This study contributes to this goal by systematically analysing day variations in physiological data collected from four subjects over five recording sessions each. This study also proposes and evaluates an updatable ensemble-based classification algorithm that has the potential to capitalize on, instead of being crippled by day

variations in physiological signals.

This paper has received 11 citations since it was published.

## Google Scholar

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<http://scholar.google.com/citations?hl=en&user=349QjhcAAAAJ>