

Amin Allam

Curriculum Vitae

Hadaïq El-Qobbah
Cairo 11646, Egypt
✉ a.allam@fci-cu.edu.eg
📄 aminallam.github.io



Education

- 2010–2017 **PhD Computer Science**, *Computer, Electrical and Mathematical Sciences & Engineering Department (CEMSE), King Abdullah University of Science and Technology (KAUST), Saudi Arabia, GPA – 3.5.*
-Dissertation title: Efficient Disk-Based Techniques for Manipulating Very Large String Databases.
- 2003–2008 **MSc Computer Science**, *Computer Science Department, Faculty of Computers and Information (FCI), Cairo University, Egypt, Grade – 93/100.*
-Thesis title: An Arabic-Disambiguating Engine Based on Statistical Approaches.
- 1999–2003 **BSc Computer Science**, *Computer Science Department, Faculty of Computers and Information (FCI), Cairo University, Egypt, Grade – 94/100.*
-Ranked first (highest grade) on my class.

Work Experience

- 2017–Present **Computer Science Lecturer**, *Computer Science Department, Faculty of Computers and Artificial Intelligence (FCAI), Cairo University, Egypt.*
-Teaching various computer science subjects such as Programming, Advanced programming, Data structures, Advanced data structures, Algorithms, Compilers, Computer architecture, and Concepts of programming languages.
- 2010–2017 **Research Assistant**, *Computer, Electrical and Mathematical Sciences & Engineering Department (CEMSE), King Abdullah University of Science and Technology (KAUST), Saudi Arabia.*
-C++ implementation of *Karect*: a novel error correction technique for next-generation sequencing, based on multiple alignment, supporting substitution, insertion and deletion errors.
-C implementation of *ERA*: suffix tree construction for very long strings.
- 2003–2010 **Teaching Assistant**, *Computer Science Department, Faculty of Computers and Information (FCI), Cairo University, Egypt.*
-Teaching basic computer science subjects, such as: Programming, Discrete mathematics, Algorithms, Data structures, and Artificial intelligence.

Research Interests

- 1 Algorithms and Data Structures for indexing and processing Large Databases.
- 2 High Performance Computing and Parallel Processing for program optimization.
- 3 Approximation Algorithms (For Computational Biology . . . etc).
- 4 Artificial Intelligence (For Optimization Problems . . . etc).
- 5 Statistical and Bayesian Approaches (For Machine Learning and Prediction . . . etc).
- 6 Mathematical Modeling and Linear Algebra applications.

Projects

- Karect 2014 Implementation of the complete efficient system for *Karect*. Karect is a novel error correction technique for next-generation sequencing, based on multiple alignment, supporting substitution, insertion and deletion errors. It can handle non-uniform coverage as well as moderately covered areas of the sequenced genome. Karect has been published in the Bioinformatics journal, a top-ranked journal in the bioinformatics area. Karect is available at <http://aminallam.github.io/karect>.
- ERA 2011 Implementation of the complete efficient system for *ERA*, constructing suffix trees for very long strings. ERA indexes the entire human genome in few minutes on an ordinary desktop computer. Implementation of these efficient variants of the system: a) Serial: for single-core processor. b) Parallel shared-memory: for multicore processor. c) Parallel shared-nothing: for linux cluster. ERA has been published in the Proceedings of the Very Large Database Endowment, a top-ranked journal in the database area.

Honora and Awards

- 2016 2nd place in AstraZeneca-Sanger Drug Combination Prediction DREAM Challenge 1B.
- 2012 1st place in *ACM SIGMOD Programming Contest* (Multidim. Database Index).
- 2009 2nd place in *CUDA Superhero Challenge 2* (Artificial Intelligence/Optimization).
- 2009 1st place in *TilesPuzzle* Topcoder Marathon match (AI/Optimization).
- 2008 3rd place in *ESPN Winning Formula* Challenge (Machine Learning/Prediction).
- 2008 1st place in *AMD Multicore Threadfest 1* contest (Scheduling).
- 2005 2nd place in ACM-ICPC Regional contest, advanced to ACM-ICPC World Finals.
- 2005 1st place in *Programmer of the Month (POTM)* contest (AI/Optimization).

Professional Service

- 2013 Organized the ACM SIGMOD Programming Contest 2013. The details are available at <http://sigmod.kaust.edu.sa>. Results of the contest were announced at the conference of ACM SIGMOD in New York, USA in June 2013.
- 2011-2016 External reviewer for CIKM, SIGMOD, SIGKDD, VLDB, and WWW conferences.
- 2011-2016 External reviewer for TKDE and Bioinformatics journals.

Presentations

- 2014 *Karect: Accurate Correction of Substitution, Insertion and Deletion Errors for Next-generation Sequencing Data*. Presented at the Computational Bioscience Research Center (CBRC), KAUST.
- 2012 *A Multidimensional Indexing System*: Presentation in USA of my winning entry achieving first place in ACM SIGMOD Programming Contest 2012. The task was to implement a multidimensional high-throughput in-memory indexing system. Results of the contest were announced at the conference of ACM SIGMOD (The Special Interest Group on Management of Data) in Scottsdale, Arizona in May 2012.

Publications

- 2020 Elkady, M., A. Elkorany, A. Allam. *ACA/IOT: A Framework for Adaptable Context-Aware IoT applications*. International Journal of Intelligent Engineering and Systems. 13(4):271–282 (Aug 2020)
- 2018 Allam, A., S. Skiadopoulos, P. Kalnis. *Improved suffix blocking for record linkage and entity resolution*. Data & Knowledge Engineering. 117:98–113 (2018)
- 2015 Allam, A., P. Kalnis, V. Solovyev. *Karect: Accurate Correction of Substitution, Insertion and Deletion Errors for Next-generation Sequencing Data*. Bioinformatics 31(21):3421-8, (2015)
- 2011 Mansour, E., A. Allam, S. Skiadopoulos, P. Kalnis. *Era: Efficient serial and parallel suffix tree construction for very long strings*. Proc. VLDB Endow. 5(1):49–60 (Sep 2011)
- 2007 Fahmy, A., A. Allam. *An Arabic-disambiguating engine based on statistical approaches*. In: 5th International Conference on Informatics and Systems (INFOS), Cairo University, P235-246, Giza, Egypt (2007)
- 2005 Omara, F.A., A. Allam. *An efficient tasks scheduling algorithm for distributed memory machines with communication delays*. Information Technology Journal (ITJ) 4, 326–334 (2005)
- 2003 Shaalan, K., A. Allam, A. Gomah. *Towards automatic spell checking for arabic*. In: Conference on Language Engineering, ELSE, Cairo, Egypt (2003)

References

- Prof. Panos Kalnis: panos.kalnis@kaust.edu.sa
- Prof. Khaled Shaalan: khaled.shaalan@buid.ac.ae
- Prof. Spiros Skiadopoulos: spiros@uop.gr
- Prof. Reem Bahgat: r.bahgat@fci-cu.edu.eg
- Prof. Aly Fahmy: a.fahmy@fci-cu.edu.eg
- Prof. Victor Solovyev: victor.soloviev@kaust.edu.sa