

## Hossam M. Hammady

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*Objective: Position as an architect and full-stack guru for highly scalable web applications.*



## OPEN SOURCE CONTRIBUTIONS

### Authored

- rayyan-formats.** Import/export plugins for reference file formats with command line utility [<https://github.com/rayyanqcri/rayyan-formats>]
- pyworker.** A pure Python worker for Ruby-based DelayedJobs. [<https://github.com/rayyanqcri/pyworker>]
- Swarm Cronjob Scheduler.** The missing cronjob scheduler for Docker Swarm. [<https://github.com/rayyanqcri/swarm-scheduler>]
- scaltainer.** Autoscale Kubernetes controllers or Docker Swarm services based on application metrics and more. [<https://github.com/hammady/scaltainer>]
- mandrill-migrate.** Node package to migrate Mandrill (Transactional email service by Mailchimp) data across accounts. [<https://www.npmjs.com/package/mandrill-migrate>]
- skipper-csv.** Node package and Skipper body parser plugin to allow CSV parsing of multipart upload streams. [<https://www.npmjs.com/package/skipper-csv>]
- Rayyan mobile app.** A mobile front-end app for Rayyan QCRI, to help systematic review authors screen citations in an intuitive fashion. It is written in AngularJS and Ionic and targets iOS/Android but can easily support other platforms. [<https://github.com/daqcri/rayyan-mobile>]
- ref\_parsers.** Parsers for various types of reference file formats (RefMan, EndNote, ...) [[https://rubygems.org/gems/ref\\_parsers](https://rubygems.org/gems/ref_parsers)]
- rails\_client\_checker.** Offers end-users a configurable /check route to check their browsers compatibility with any Rails application. [[https://rubygems.org/gems/rails\\_client\\_checker](https://rubygems.org/gems/rails_client_checker)]
- qscrape.** Scraper (web crawler) for vehicle classified websites in Qatar. [<https://github.com/hammady/qscrape>]
- heroku\_buildpack\_multimake.** Heroku Buildpack for multiple automake/make-based programs. [<https://github.com/hammady/heroku-buildpack-multimake>]

### Contributed to

- mongify.** Implemented continuous sync operation into mongify, a tool that allows mapping data from a relational database into a mongodb document database. [<https://github.com/anlek/mongify/pull/35>]
- delayed\_job\_web.** Heroku worker integration with zombie detection for DelayedJob Web, a Resque inspired Ruby gem interface for delayed\_job. [[https://github.com/hammady/delayed\\_job\\_web](https://github.com/hammady/delayed_job_web)]
- sunspot.** Enabling soft commits in sunspot (ActiveRecord wrapper for RSolr Ruby Solr client) [<https://github.com/hammady/sunspot>]
- cloud\_pg\_catcheck.** A simple, yet lightning fast tool for diagnosing postgresql catalog corruption. [[http://github.com/hammady/cloud\\_pg\\_catcheck](http://github.com/hammady/cloud_pg_catcheck)]
- others.** mass\_mandrill, redmine2github, posgres-copy, ParallelCurl, rails-latex, ... [<https://github.com/hammady>]

## PROFESSIONAL EXPERIENCE

*Senior Software Engineer*

**Qatar Computing Research Institute**  
Qatar

*Mar 2016 - Present*

**Rayyan, the Systematic Reviews web app.** Architecting and leading the engineering of Rayyan, an on-line research platform to help authors produce systematic reviews and other types of literature reviews. Many machine learning, classification, prediction, deduplication and entity resolution techniques lie at the heart of Rayyan. Launched in Sep 2014, it attracted 11K+ researchers that double every 6 months. Written mostly in Ruby with several components in Python, Java, C, and jQuery. Solr, Postgresql and memcached are used for indexing, persistence and caching, respectively. RSpec is used for a 95%+ coverage model, controller and integration test suite. Different services are dockerized and run inside a Kubernetes cluster, allowing the architecture to be horizontally auto-scalable across all tiers. Rayyan was featured in Cochrane Colloquium 2014/15/16/17, Evidence Live 2015 and appears in several online guides. [<http://rayyan.qcri.org/>]

**Nadeefiler.** Interactive Data Profiler Dashboard, a full-stack Javascript web app (AngularJS, NodeJS, RabbitMQ and MongoDB) for profiling tabular data to infer data types, semantic types using YAGO knowledge-base, outlier detection and visualise results using charts and histograms. [<https://github.com/daqcri/nadeefiler>]

*Software Engineer*

**Qatar Computing Research Institute  
Qatar**

*Jul 2012 - Apr 2016*

**AllegatorTrack for Truth Discovery (DAFNA).** An extensible/scalable benchmarking web platform to compare multiple fact checking (truth discovery) techniques with the ability to generate visual explanations of the results and allege true claims by producing controlled contradictory input. It is written in Ruby on Rails and jQuery with core algorithms implemented in pure Java. Running on heroku cloud platform, it is horizontally auto-scalable. It was presented in the highly prestigious conference ICDE 2015. [<http://dafna.qcri.org>]

**Rayyan mobile app.** A universal mobile (iOS/Android) front-end app for Rayyan (see below). It hit the AppStore and Google Play on Oct 2nd, 2015. [<http://rayyan.qcri.org/mobile>]

**Traffic visualization.** Based on raw sensor data collected by Qatar Mobility Innovation Center, built a web visualization tool to demonstrate traffic flow in Doha. With the Data Analytics team, crafted several techniques for data cleaning, duplicate detection, speed violations, traffic predictions, ...

*Teaching Associate  
IT support*

**Texas A&M University  
Qatar**

*May 2009 - Jun 2012*

**Teaching ENGR 111 Foundations of Engineering.** Project examples: UPC-A barcodes & QR-codes encoding/decoding using MATLAB and a scanning robot that reads in large barcodes.

**Web apps deployment, administration or regular usage.** RedDot & Joomla CMS administration and deployment; DyKnow classroom monitoring, Centra video conferencing, Respondus online surveys & Camtasia screen recording.

**National Instruments mine-detection robot.** I helped the students in the National Instruments mine-detection robot competition by designing the path-finding algorithm of the robot and implementing it on the Compact RIO microcontroller using LabVIEW software.

**Instructor for Introduction to Linux short course.**

**Teaching ECEN 248 Introduction to Digital Logic Design.**

**Teaching ECEN 289 Introduction to Computers and Programming.**

**MicroBlaze soft-processor C++ simulator.** This project aims at simulating the execution of programs for the MicroBlaze processor on a PC. All hardware parts are simulated in software including the 5-stage pipelined CPU, the ALU, the physical memory and the Cache.

*Team Leader*

**EJADA Systems  
Egypt**

*Feb 2009 - May 2009*

**Web 2.0 framework for enterprise applications.** Leading a team of 8 developers on a Web 2.0 framework for enterprise applications to replace classical EJB applications.

*Senior Developer*

**eSpace Technologies  
Egypt**

*Feb 2008 - Nov 2008*

**weNear Javascript client demo.** A Google Maps-powered Javascript application.

**MySpaceIM for OpenFire Gateway IM plugin.** This is a plugin for OpenFire, a Jabber/XMPP client that adds support to MySpace IM protocol, built on MySpace IM Java library. [[www.igniterealtime.org/projects/openfire](http://www.igniterealtime.org/projects/openfire)]

**ShoppingGuide for the iPhone.** a native iPhone application fully implemented in Javascript over Jiggy.

It is built over weNear framework. The application identifies user location using GSM data only (no GPS hardware required), then locates him/her on Google Maps. User sees his online friends and gets notified by nearby shopping announcements.

**Google Maps native iPhone widget.** A native iPhone widget to directly access Google map-tiles instead of relying on the Javascript API. It is implemented in Javascript over Jiggy.

**Scrymbian (a Symbian platform Javascript framework).** The goal of this framework is to enable mobile-platform developers to write native Symbian applications using only Javascript, no compilation needed. It is inspired by Jiggy for Apple iPhone.

**MySpace IM client library.** This is a Java library to handle communication with the MySpace IM (Instant Messaging) server. It can be used in any Java application to create an IM client that connects to MySpace IM server.

*Project Manager*  
*Team Leader*

**Gawab.com**  
**Egypt**

*Jun 2006 - Dec 2007*

**AsesorSeguros.** A Web 2.0 application based on Gawab Webmail3 framework.

**Multi-instance forums.** Distributed, multi-instance versions for phpBB and vBulletin forum applications.

**Production servers administration.** Maintaining production servers running Debian/Ubuntu.

**Gawab HR.** Custom web app to record employee check-ins and check-outs and calculate working hours, salaries, vacations and holidays.

*Web Developer*  
*Core Developer*

**Gawab.com**  
**Egypt**

*Feb 2005 - Jun 2006*

**Gawab Webmail3.** A complete Web 2.0 email solution.

**Gawab Campaigner.** A website for launching targeted ad campaigns.

*Senior Student*

**Alexandria University**  
**Egypt**

*Oct 2003 - Jul 2004*

**BSc Graduation Project. Implementing the BeOS (Haiku) API over Embedded Linux.** The objective was to implement a set of kits offered by the Haiku OS (formerly known as BeOS) using embedded Linux kernel to run normally on the HP-Compaq iPAQ PDA.

## FREELANCING EXPERIENCE

**Elmohafez mobile apps.** Acting as business analyst, product manager and part-time developer. Elmohafez is an iOS/Android/Windows mobile app that enables users to memorize Quran with Othmani script in 10 rewayas (accents) plus Hadith books (Prophet Muhammad narrations) and Mutoon (Scientific poems) by reading aloud text and recording user voice who compares it with the original. There are many unique features in this app like word highlighting in sync with playback, external display, progress monitoring, audio translations, ... It has attracted 300K+ users on the 3 mobile platforms. [<http://www.elmohafez.com>]

**Speech Annotator.** A web app to annotate speech signals using a phonetic keyboard and stress signals using a simple Ruby CGI backend.

**Wasseyapp (Islamic Will).** Acting as business analyst and product manager. Wasseyapp is a multi-platform mobile app written in PhoneGap. It enables users to fill in all debts, link with contacts, attach images and do all the stuff related to one's will. Finally users can share, email or print a PDF version of his Will. [[www.wasseyapp.com](http://www.wasseyapp.com)]

**Huroof mobile app.** iOS educational app that enables users (usually children) to browse all letters of Arabic & English, listen to their pronunciation and record their voice which gets automatically verified using speech technologies (Pocketsphinx engine with Arabic/English models)

**IslamHouse mobile apps.** Acting as business analyst, product manager and part-time developer. IslamHouse is an iOS/Android mobile app that enables viewing books/videos in 80+ languages with the ability of sharing on social networks. [<http://www.islamopedia-app.com>]

**Redmine Web 2.0 client.** Acting as business analyst & project manager. This is a GWT-based client for Redmine project management service.

**YouTube video downloader via email.** Utility scripts that on receiving an email (via postfix/procmail) having a YouTube link would download it and reply back with the video as an attachment.

**Egypt-Numbers.** A set of mobile apps for (BlackBerry and Java) to automatically find and update Egypt

mobile contacts for the nationwide change in Egypt at October 6th, 2011 that transforms all mobile prefixes to longer ones according to a set of rules. [<http://www.egypt-numbers.com>]

**Qatar-Numbers.** A set of mobile apps (BlackBerry, Symbian and Java) to automatically find and update Qatari contacts for the nationwide change in Qatar at July 10th, 2010 that repeats the first digit of all phone numbers. [<http://www.qatar-numbers.com>]

**Asterisk PBX.** Building PBX, call-center and PC-to-Phone gateways using Asterisk VoIP Linux-based platform.

**Web scrapers.** Web scrapers to get updates for vehicles and real estate from various websites.

## EDUCATION

**Master of Science in Computer Engineering, 2009**

*Arab Academy for Science, Technology and Maritime Transport (AAST)*

Field of research: Speech Recognition. Title: A new confidence measure using articulation features applied on computer-aided pronunciation learning systems for teaching the recitation of the Holy Quran.

**BSc in Computer Engineering, 2004**

*Alexandria University, Faculty of Engineering, Computer Science and Automatic Control Department*

Grade: Distinction with degree of honour (91.61%), 5th on class.

## PUBLICATIONS

[2016] ML Ba, L Berti-Equille, K Shah, HM Hammady, “**VERA: A Platform for Veracity Estimation over Web Data**”. 25th International Conference Companion on WWW

[2016] M Ouzzani, H Hammady, Z Fedorowicz, A Elmagarmid, “**Rayyana web and mobile app for systematic reviews**”. Systematic reviews (Journal) vol5 issue1

[2015] Dalia Attia Waguih, Naman Goel, Hossam M Hammady, Laure Berti-Equille, “**AllegatorTrack: Combining and Reporting Results of Truth Discovery from Multi-source Data**”. ICDE 2015, Seoul, South Korea

[2015] M Khabsa, A Elmagarmid, I Ilyas, H Hammady, M Ouzzani, “**Learning to identify relevant studies for systematic reviews using random forest and external information**”. Machine Learning

[2014] Divy Agrawal, Laure Berti, Hossam Hammady, Prasenjit Mitra, Mourad Ouzzani, Paolo Papotti, Jorge Quiane Ruiz, Nan Tang, Yin Ye, Si Yin, Mohamed Zaki, “**Data Science at QCRI**”. Qatar Foundation Annual Research Conference

[2014] Elmagarmid A, Fedorowicz Z, Hammady H, Ilyas I, Khabsa M, Ouzzani M., “**Rayyan: a systematic reviews web app for exploring and filtering searches for eligible studies for Cochrane Reviews**”. Abstracts of the 22nd Cochrane Colloquium; 2014 21-26 Sep; Hyderabad, India

[2012] Beena Ahmed, Hossam Hammady, “**Two-dimensional Barcodes: An Effective Real World Example To Teach Design and Programming**”. Proceedings of the International Conference on Education & E-Learning Innovations, July 2012, Sousse, Tunisia.

## EXTRACURRICULAR ACTIVITIES

- I was a teaching assistant and instructor in the AAST during winter 2006. I was handling Computer Network Security and Cryptography undergraduate course section and labs.

## PERSONAL INFORMATION

**Twitter:** @hammady

**Blog:** <http://blog.hammady.net>

**LinkedIn:** <http://qa.linkedin.com/in/hammady>

**Spoken Languages:** Arabic (mother tongue) and English (IELTS 8)

## REFERENCES & RECOMMENDATIONS

References furnished upon request. Please check recommendations for me on LinkedIn.