Alessandro Cosentino

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November 13, 2019

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Summary

- 5 years of experience as software engineer in varied industries (healthcare, e-marketing, mobile apps)
- Research experience and publications in the fields of quantum computing and optimization
- Contributor to open-source projects: ownCloud (a cloud collaboration software), KDE (a Linux desktop environment), QETLAB (a MATLAB Toolbox for Quantum Entanglement).

Work Experience

- **Babylon Health** — London, UK
  Software Engineer — *August 2018 – current*
  - Tech lead of the Concierge Chat Provider project since June 2019
    - The first service in the user interaction of Babylon Health app users with the AI Chatbot
    - Roll-out in production started October 2019 (It serves thousands of NHS patients per day)
  - Developed Business FAQ in the AI Chatbot, a feature to automate answers of customer support queries (e.g. "How can I book a face-to-face appointment with a doctor?")
    - It reduced the number of phone calls to customer support by 20% in the first 3 months
    - Launched in production in two months (Collaboration with the Machine Learning team)

  [Microservice architecture on a Python-Flask-Postgres-Redis stack, deployed on Kubernetes.]

- **Yieldify** — London, UK
  Data Engineer — *January 2017 – August 2018*
  - Built data pipelines and a backend API framework for A/B testing of marketing campaigns (used by Domino's Pizza, M&S, Virgin Trains)
    [Data pipelines written in PySpark and API framework in TypeScript on NodeJS.]
  - Built a data system to store client metadata (e.g. Virgin Trains marketing campaigns) in the same data warehouse as user data (e.g. behaviour of Virgin Trains web customers).
    [Event-driven serverless pipeline built in TypeScript deployed on Amazon Web Services.]

- **Bending Spoons** — Milan, Italy
  Data Engineer — *January 2016 – December 2016*
  - First engineer in the data science team, developing an in-house tool for analysing financial data of the mobile apps market through fetching and processing terabytes of Apple App Store data
    [Backend built in Python with data stored in Redis, Postgres and Google BigQuery.]

- **ownCloud** — remote
  Google Summer of Code student developer — *Summer 2012*
  - Created the News App, an open-source feed reader for the cloud platform ownCloud
    - Project sponsored with $5000 awarded by Google
    - For two consecutive years in the top 5 of the ownCloud App store
    - The project repository reached 300+ stars on GitHub

  [Backend in PHP and frontend in CoffeeScript with AngularJS.]

Education

- **University of Waterloo** — Waterloo, Canada
  Ph.D. Computer Science — *2010 - 2015*
  - Recipient of a David R. Cheriton Graduate Scholarship
  - Fellow of the Institute for Quantum Computing
  - Teaching Assistant for graduate and undergraduate courses
  - Research Intern at LIAFA – **Université Paris Diderot** with Prof. Magniez

  Thesis title: "Quantum State Local Distinguishability via Convex Optimization."

  Thesis supervisor: Prof. John Watrous

- **University of Pisa** — Pisa, Italy
  M.Math and B.Math Computer Science — *2003 - 2009*
  - Final score: 110/110 *cum laude*
  - Exchange student at **Aarhus University** for nine months

  Master Thesis title: "On some combinatorial properties of graph states."

  Thesis supervisors: Prof. Anna Bernasconi and Prof. Simone Severini

Publications

- S. Bandyopadhyay, A. Cosentino, N. Johnston, V. Russo, J. Watrous, and N. Yu. "Limitations on Separable Measurements by Convex Optimization". In: *IEEE Transactions on Information Theory* 61.6 (June 2015), pp. 3593–3604.
- Alessandro Cosentino and Vincent Russo. "Small sets of locally indistinguishable orthogonal maximally entangled states". In: *Quantum Information & Computation* 14.13&14 (2014), pp. 1098–1106.
- Alessandro Cosentino, Robin Kothari, and Adam Paetznick. "Dequantizing Read-once Quantum Formulas". In: *8th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2013)*. Vol. 22. Leibniz International Proceedings in Informatics (LIPIcs). 2013, pp. 80–92.
- Alessandro Cosentino. "Positive-partial-transpose-indistinguishable states via semidefinite programming". In: *Phys. Rev. A* 87 (1 Jan. 2013), p. 012321.
- Alessandro Cosentino and Simone Severini. "Weight of quadratic forms and graph states". In: *Phys. Rev. A* 80 (5 Nov. 2009), p. 052309.

Research Software Projects

- **LocalDistinguishability** – Extended the MATLAB suite QETLAB with a function to compute the probability of locally distinguishing quantum states – www.qetlab.com/LocalDistinguishability
- **QuadraticFormsWeight** – An efficient implementation (in Python) of Ehrenfeucht-Karpinski algorithm for counting solutions of XOR-formulas (useful in research for quantum graph states)
- **Algotiro** – Implemented (in C#) and tested performance of variants of the Gale–Shapley algorithm with an application to matching students of the University of Pisa to industry internships