# Alessandro **Candolini**

Physicist    Software Engineer
*London, UK*

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## About me

I am an Italian theoretical physicist with heavy mathematical and statistical background, smart at problem-solving, and truly passionate about software engineering. Although confident in delivering fast solutions at pace if/when business-critical, I love quality. In the last years I have been working primarily as Android software engineer, making informed and effective usage of design principles, clean code, architecture and TDD to drive the development of production-ready apps. These are my weapons of choice to safely approch either new features as well as to mitigate the risks involved whenever dealing with unavoidable legacy code, and I devote my effort to spread these techniques across my teammates. I'm always looking for the the best tradeoff between engineering and business needs. I enjoy working in a dynamic environment where I can also keep an eye on (and borrow ideas, patterns, and technology from) emerging trends in related fields (eg, backend). My current interests include functional programming, category theory, concurrency and machine learning. I firmly believe in the future of highly cross-disciplinary fields. My background as a physicist and my diversified work experiences make me a valueable asset to approach challenging tasks. My ideal job would involve working in a stimulating team where I feel an appreciation for quality, when can play a key role helping the company to grow their business and at the same time where I have the opportunity to improve myself and my skills.

## Skills

- Android development (Kotlin/Java)
- Functional programming (Scala/Kotlin)
- Reactive extensions (RxJava2/RxBindings)
- Testing: TDD additected, unit, integration, UI, property-based, api-contract
- OOP&FP design patterns, SOLID, mobile and back-end architectures
- concurrency (Rx, CSP and coroutines, futures, java multithreading primitives)
- Java/Android libraries: Dagger2, Retrofit, Room, etc
- Algorithms and data structures
- CI/CD, git, gradle, jenkins, sonarqube, jacoco, lint
- PR, code reviews, pairing & mentoring

## Work Experience

**Depop** *London, UK*
Android & Scala Software Engineer *November 2017 - PRESENT*

- Develop new features for the Depop marketplace app 1,000,000+ installations worldwide, 4.2 stars rating. Key functionalities I have implemented: Instagram-like 60fps gallery image picker, mark item as shipped, share profile shop, and more.
- Scala development of a costellation of mobile-specific api microservices using play; codebase is heavily shaped on FP patterns (applicative, monads), as approach I follow contract-driven development (tools: apiary, blueprint and dredd). Infrastructure runs on AWS, for monitoring librato is used.
- Work hard to modernise the android codebase and build re-usable library components for the teams
- Driven the adoption of Kotlin as main language to develop every new feature, in particular emphasizing functional capabilities of the language and spreading knowledge about coroutines-based concurrency patterns
- Advocating adoption of feature modules to restructure the monolithic structure of the android codebase, in order to make tdd effective, increase decoupling, ultimately allowing the company to scale the structure of the teams
- Pairing, coaching and mentoring. My approach encourages a critical attitude to reason about the problem, understand the (technical and non-technical) constraints, question about the possible strategies and their tradeoffs, and evaluate pros and cons of different solutions
- Responsible of defining a testing strategy to drive adoption of BDD and TDD across the whole mobile (android and ios) teams. Tools: apiary, dredd, wiremock, junit, mockito, espresso
- Promoting communication between team members and between teams at all levels
- We follow scrum, 2-weeks sprints with release at the end of each sprint (for mobile teams) and kanban and CI/CD (for backend)
- App is freely available from `https://play.google.com/store/apps/details?id=com.depop&hl=en_GB`

## Sainsbury's
### Software engineer

*London, UK*

*February 2016 - October 2017*

- Leading the android development of the Grocery native app for shopping online. 150k+ users UK-wise, 4 stars rating on the playstore even though the app consumes data from a quite unreliable source (plain html scraping)
- Implement, maintain and deploy new features at consistent speed (bi-weely release cycle), without compromising code quality and with proven ability to arrange urgent tasks and contingencies. Key functionalities I have implemented: security enhancements, 3d-secure payments in app, push notifications, and more
- Be proactive, take ownership and responsibility on critical choices to enhance the value of the product
- Find the right tradeoff between short workarounds vs long-term solutions to meet business and customer needs
- Refactor codebase, promoting adoption of TDD/BDD, clean, MVP, Rx, Dagger, retrofit and functional patterns
- Be a go-to person, do mentorship and training
- I have been praised by the company for my hard work
- **Technologies**: RxJava2, Dagger2, Retrofit2 (I have implemented custom converter to hide the scraping part), Jsoup, Realm, Fresco, firebase, appsflyer. Tests: junit4, mockito, espresso, appium, wiremock.
- CI/CD: I setup the delivery pipeline running unit tests, espresso tests on aws farm, jacoco, sonarqube, lint
- App is freely available from `https://play.google.com/store/apps/details?id=com.sainsburys.gol&hl=en`

## Spotlime
### Android software engineer

*Milan, Italy*

*September 2014 – December 2015*

- Leading the development of the Android fully native application for Spotlime, a startup aimed at promoting the discovery of the best events in Milan, Rome, etc. 6+k users, 4+ stars on the playstore.
- Implement *from scratch* and mantain the Spotlime android native application (i was the only android dev)
- Work alongside the marketing team to deliver a user-centric product closer to real customer needs, promoting solutions that helps improving UX in response to users' feedback and analytics data.
- Work alongside server-side and iOS developers to coordinate the upcoming releases, following CTO directives.
- Help to develop Spotlime booking desktop website using mainly server-side JSF and primefaces.
- Self-managed, self motivated, able to work with little or no supervision
- Key functionalities: client-server data synchronization, offline first app managed from scratch, advanced geolocation and geofencying, Facebook login, push notifications, in-app cc payments.
- **Technologies**: sqlite3, Ormlite, Glide, GA and appsflyer
- App is freely available from `https://play.google.com/store/apps/details?id=com.gooutsrl&hl=en`

## Usablenet - leading global mobile and multi-channel technology company.
### Lead Quality Assurance Analyst

*Udine, Italy*

*October 2012 – August 2014*

- After few months working as a quality assurance analyst, I was promoted quality assurance team leader at Usablenet, a leading technology platform company delivering enterprise-level mobile and multichannel commerce solutions. Team of 7 QA people, for a total number of 200 projects.
- Working in synergy with mobile web developers, project manager, solution engineer team and customers to consistently deliver high-quality products that fulfills customer expectations and end user needs.
- Monitor and track project status during all steps, to meet deadlines and ensure all scope changes, variances and contingences that may arise during the projects lifecycle were visible to all people involved.
- Ability to prioritize and track multiple projects in parallel, manage allocation of resources within the team, supervise and support my team activities.
- Be a go-to person.
- Proven ability to work under pressure responsibly and fulfilling high expectations.
- Promote new strategies to speed up effective communication among all teams involved in the project, suggesting improvements to current workflows and defining new internal procedures.
- Debugging and monitoring of technical requirements (for example requirements involving akamai technologies).
- 247 QA support.
- Developing small scripts (mainly using Python+JQL) which help to retrieve project information from Atlassian Jira and provide automatic statistical reports about project status.
- Personally responsible as QA analyst of: Camelot Group (UK National Lottery, including the launch of the mobile website for the new lotto raffle on October 2013), Dell Inc. (22 countries including US, UK, China etc), FedEx, MaryKay, Selfridges, Surfstitch and many others.
- Company website: `http://usablenet.com/`

## University of Udine
### Teacher (on call)

*Udine*

*2006 – 2012*

- I have been asked for six years to teach the *Esercitazioni guidate di Fisica per il Corso di preparazione al Test di ammissione alla Facoltà di Medicina e Chirurgia* at the University of Udine (support training lectures organized for candidates to the placement exam for accessing the courses at the faculty of Medicine).

## R.U.E. Risorse Umane Europa (no-profit association)
### IT technical expert (on call)

*Udine*

*September 2011 – August 2012*

- Handling the IT issues in a small office (5 employees): pc, network and website maintenance

## Consorzio per la Fisica
<span style="color:red">Trieste</span>

LATEX 2ε TYPESETTER — *January 2010 – December 2010*
- I typeset prof. E. Gozzi lectures notes for his course of Quantum Mechanics using custom LATEX 2ε style and including the images/plots
- The notes are freely available at `http://www-dft.ts.infn.it/~gozzi/QM2.pdf`

## I.N.F.N. (Istituto Nazionale di Fisica Nucleare)
<span style="color:red">Trieste</span>

C++ DEVELOPER AS VOLOUNTEER — *February 2008 – May 2008*

Development of a object-oriented C++ library for uniform and non-uniform pseudo-random number generations, including some cutting edge algorithms

# Education

## University of Trieste
<span style="color:red">Trieste (Italy)</span>

MASTER STUDENT IN THEORETICAL PHYSICS — *September 2009 – now*
- Still under completion (due to work). I have successfully done exams including: advanced statistical mechanics, quantum field theory, advanced mathematical methods and computational physics, including C++ implementation and comparison of symplectic algorithms for numerical integration of ordinary differential initial valued problems in classical molecular dynamics and monte carlo simulation of statistical mechanics system like the spin Ising model

## University of Trieste
<span style="color:red">Trieste (Italy)</span>

BACHELOR'S DEGREE IN PHYSICS 110/110 — *May 2009*
- Thesis title: *Simulazione numerica dello stress termomeccanico in un ellissometro.*
- Advisor: Prof. E. Milotti.
- Description: numerical simulation of the influence of laser beam-pointing fluctuations on the thermomechanical stress-induced birefringence in the optical ellipsometer of PVLAS experiment. The thesis required a deep understanding of the physics involved, knowledge of stochastic processes, familiarity with signal processing and 1 year of advanced C++ programming including the development of an object-oriented library for finite-element solution of partial differential equations in rectangular domains cooupled to numerical integration of Ito stochastic differential equations. Thesis available (in Italian) at `http://www.infn.it/thesis/PDF/getfile.php?filename=3304-Candolini-triennale.pdf`

## Liceo Scientifico Statale G. Marinelli (Scientific diploma, high school)
<span style="color:red">Udine (Italy)</span>

SCIENTIFIC HIGH SCHOOL DIPLOMA 100/100 — *July 2005*
- High school's thesis in physics: *Approccio spazio-temporale globale alla teoria quantistica e formulazione di Feynman della QED* (translation: overall space-time approach to quantum theory and Feynman's formulation of QED). Advisor: Prof. F. de Stefano

# Continuing Education

## MOOCs

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|---|---|---|
| 2014 | **Machine Learning,** Statement of Accomplishment of Andrew Ng's Machine Learning course. Website: `https://www.coursera.org/learn/machine-learning/home/info` | <span style="color:red">Coursera</span> |

## WORKSHOP AND SCHOOLS IN PHYSICS

| | | |
|---|---|---|
| 2016 | **Conference on Long-Range-Interacting Many Body Systems: from Atomic to Astrophysical Scales** , Attended in streaming. Website: `http://indico.ictp.it/event/7612/` | <span style="color:red">ICTP, Trieste (Italy)</span> |
| 2016 | **Spring School on Superstring Theory and Related Topics,** Attended in streaming (due to work). Website: `http://indico.ictp.it/event/7624/` | <span style="color:red">ICTP, Trieste (Italy)</span> |
| 2013 | **School on Supersymmetry and Unification of Fundamental Interactions (Pre-SUSY 2013),** Attented as partecipant. Website: `http://presusy2013.ictp.it/` | <span style="color:red">ICTP, Trieste (Italy)</span> |
| 2013 | **Workshop on Ultracold Atoms & Gauge Theories,** Attented as partecipant. Website: `http://cdsagenda5.ictp.trieste.it/full_display.php?ida=a12184` | <span style="color:red">ICTP, Trieste (Italy)</span> |
| 2012 | **Workshop on Majorana Fermions, Non-Abelian Statistics and Topological Quantum Information Processing,** Attented as partecipant. Website: `http://cdsagenda5.ictp.trieste.it/full_display.php?email=0&ida=a11183` | <span style="color:red">ICTP, Trieste (Italy)</span> |
| 2010 | **Ph.D. Course of Introduction to Bayesian methods,** I attended *as voulonteer* the Ph.D. course of Introduction to Bayesian methods (Prof. E. Milotti). Topics covered: Bayesian inference, Maximum-Entropy and its applications to image restoration, EM algorithm, Markov-Chain Monte Carlo, Hidden Markov models, naive Bayesian learning and Bayesian classifiers (AUTOCLASS). Website: `http://wwwusers.ts.infn.it/~milotti/Didattica/Bayes/Bayes.html` | <span style="color:red">Trieste (Italy)</span> |

## Scholarships

| | | |
|---|---|---|
| 2009 | **University College for Sciences "Luciano Fonda",** Awarded with the scholarship for academic achievements. Evaluation was based on face-to-face examination and documents supporting the application (CV, certificate indicating the exams sat and marks, cover letters). | *Trieste (Italy)* |
| 2005–2008 | **University College for Sciences "Luciano Fonda",** Awarded with the scholarship for academic achievements and maintaned it for the three years of undergraduate studies. Evaluation was based on writing and face-to-face examinations. To maintain the right to the scholarship students had to sit all the exams set for each year obtaining an *average mark of at least 27/30* and *no less than 24/30* in every exam. | *Trieste (Italy)* |

## Pubblications

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|---|---|
| 2003 | **Radio Observations of the 2002 December Ursids from North-Eastern Italy,** W. Boschin, D. Ganzini, *A. Candolini*, G. Candolini, WGN, 31:1 29–30. `http://adsabs.harvard.edu/abs/2003JIMO...31...29B` |

## Hobbies

- Molecular bartendering, modern mixology, and gin
- Meetups (especially tech ones, i'm the founder and organiser of `https://www.meetup.com/MonadicAperitives/`, a meetup for promote adoption of functional programming in industry)
- Listening to blues and rock: Eric Clapton, Peter Green, Joe Bonamassa, Mark Knopfler, Deep Purple, and more
- Reading books (I'm a proud fan of Dostoevskij)
- Typography (I love R. Bringhurst's *Elements of Typographic Style*, among my favourite fonts are MinionPro opticals, and I enjoy using LaTeX to implement typographic finesse)
- Walking with my Siamese cat Ciambella: `https://www.facebook.com/profile.php?id=100004536498274`