

# JUAN M. FONSECA-SOLÍS

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Personal webpage: [juanfonsecasolis.github.io](http://juanfonsecasolis.github.io)

Costa Rica, a land with no army since 1948.

**On weekdays:** software quality control guy with experience in functional and non-functional testing for web applications at full-agile environments. Familiar with mobile device testing. Elaboration of test plans, estimation, automation, and execution of test cases (smoke, regression, sanity), and quality metrics.

**On weekends:** digital signal processing fellow devoted to the development of algorithms for music pitch recognition, forecasting, voice recognition, frequency analysis, denoising, compression, filtering, interpolation, sensor fusion, and feature extraction.

**Academic interests:** mathematical signal processing, audio processing and acoustics, subjective audio quality assesment (QoE), pattern recognition, IoT, data science, and wearables.

## EXPERIENCE

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### Gorilla Logic

03/20 – present — San José, CR

*Mid Automation QA Engineer*

- Performed manual and automated testing for a client dedicated to pipeline inspection services.
- **Technologies:** Azure DevOps, Xamarin UI.Tests, BDD with SpecFlow.

### Avantica Technologies (now an Indecomm company)

06/18 – 02/20 — San José, CR

*Software quality assurance engineer II*

- Performed manual testing for clients dedicated to personal credit management and photo personalization services. Wrote an internal training for testing Rest and Soap web services using state-of-the-art tools, and provided insights for audio and video quality metrics (PESQ, among others).
- **Technologies:** Optimizely, Kibana, Mixpanel, JBoss, MySql, Charles Proxy, Jenkins, Zeplin, Miro, Graphene, TestRails, and Photoshop, SoapUI, Postman, RestAssured, cURL, Swagger, security testing (BURP, CSRF, brute force attacks).

### Universidad de Costa Rica

09/16 – 12/17 — San José, CR

*Research scientist at the Research Center on Information and Telecommunication Technologies, CITIC*

- Tested and improved an audio signal processing algorithm for recognizing rich-harmonic pitch contours in highly polluted environments. The algorithm was later adapted to recognize the sound of accessible pedestrian signals. Implemented the solution in a mobile application ([downloadable here](#)) and publicated the results in two scientic journals.
- **Technologies:** Android SDK, Octave/Matlab, MusicG, Android-plot, and L<sup>A</sup>T<sub>E</sub>X.

### Avantica Technologies

11/13 – 09/16 — San José, CR

*Software quality assurance engineer*

- Delivered high-quality products for an amazing crew whose lemma was “helping people make better health decision”. Executed and estimated test cases at different levels: integration, regression, web-services, performance, security, and accessibility (WCAG 2.0). Automated UI test cases and took care of the CD/CI pipeline. Developed an internal application for sanitizing beacons that saved hours of frustration to the team.
- **Technologies:** Selenium WebDriver on C#, Charles Proxy, Splunk, GO pipeline, Sortsite, and Burp.

### Universidad de Costa Rica

03/14 – 07/14 — San José, CR

*Teaching Assistant, sound processing course CI2813*

- Coordinated course projects and assisted 12 students in their assignments.

**Smartsoft Int.**  
*Software engineer*

07/13 - 11/13 — San José, CR

- Developed applications for banking.
- **Technologies:** Soap APIs, C#, Visual Basic.

## EDUCATION

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**Instituto Tecnológico de Costa Rica (TEC)**

01/16 - 07/18 — Cartago, CR

M.Sc. in electronics with emphasis in digital signal processing.

Overall GPA: 3.6/4.0

**Universidad de Costa Rica (UCR)**

03/07 - 06/13 — San José, CR

Bs in computer science and informatics.

## TECHNICAL STRENGTHS

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**Proficient with** C/C++, C#, Bash, Python, MATLAB, Java, L<sup>A</sup>T<sub>E</sub>X, SQL.

**Familiar with** JS/HTML/CSS, Intel Assembler, Verilog, Prolog.

**Not already mentioned tools** Linux (vim, autotools, valgrind, GDB, QEMU), Git, OpenCV, Pandas, Jupyter notebook.

**Libraries** Numpy, Scipy, Matplotlib, JUnit, OpenMP.

**Numerical tools** Fourier transform, Z transform, IIR and FIR filter design, PCA, Mahalanobis, SVD, psychoacoustics, Wiener filters, Kalman filters, K-means, Naive bayes, MFCC, CNN, HMM.

## LANGUAGE

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**English** TOEIC (B2 on 2014).

**Spanish** native speaker.

## RELEVANT COURSES

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### CS

Operating systems  
Artificial intelligence  
Software engineering I & II  
Computer networks  
Databases I & II  
Computer architecture  
Compilers and automatas  
Probability and statistics  
Calculus I-III  
Operations research  
Linear algebra

### EE

Digital signal and image processing  
Software Verification  
Embedded systems  
Computer vision  
FPGA prototyping  
Sound processing  
Functional analysis and LO theory  
Pattern recognition  
Adaptive signal processing  
Intellectual Property  
Systems and models

## VOLUNTEER EXPERIENCE

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- Jan-Apr 13. Developed the first webpage for ACAI, the costarican implementing agency of the United Nations High Commissioner for Refugees (UNHCR) at <http://www.acai.cr/sitioweb/>.
- **Technologies:** Drupal, CSS, HTML 5.

## MASSIVE OPEN ONLINE COURSE (MOOC)

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- Digital Signal Processing, École Polytechnique Fédérale de Lausanne. Aug 2018. License: Y4TSW9PA3SS3.
- Introduction to Embedded Systems Software and Development Environments, University of Colorado Boulder, Jul 2018. License: A3UNMYW48L4F.
- Programming Mobile Applications for Android Handheld Systems: Part 1 & 2, Computer Science Department, University of Maryland, Feb-Apr 2017. Licenses: WE959Z2968U4 and 45R4J2TCZULK.

## AWARDS

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- Avantica Technologies. *Chosen idea of Innovathon 2015*. Designed math and circuitry for a data acquisition system that used a sonometer and a ESP8266 for logging the levels of acoustic intensity in open-plan offices during videoconference time.

## PUBLICATIONS

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- Author. *Accessible pedestrian signals recognition using an adaptive approach*. Escuela de electrónica. TEC. Cartago, CR. 2018. Master thesis. <https://repositoriotec.tec.ac.cr/handle/2238/11099>.
- Co-author. *Automatic recognition of accessible pedestrian signals*. The Journal of the Acoustical Society of America 141. 3913. Boston, USA. 2017. <https://doi.org/10.1121/2.0000675>.
- Co-author. *Automatic recognition of accessible pedestrian signals*. JoCICI17 (2). Cartago, Costa Rica. 2017. [https://www.academia.edu/39100068/Reconocimiento\\_automatizado\\_de\\_se%C3%B1ales\\_accesibles\\_de\\_semaforo\\_en\\_dispositivos\\_m%C3%B3viles](https://www.academia.edu/39100068/Reconocimiento_automatizado_de_se%C3%B1ales_accesibles_de_semaforo_en_dispositivos_m%C3%B3viles)
- Author. *Detección de voces y otros ruidos en ambientes de trabajo y estudio*. JoCICI15 (1): 68-71. CITIC-PCI. San José, CR. 2015. [https://www.academia.edu/39038694/Detección\\_de\\_voces\\_y\\_otros\\_ruidos\\_en\\_ambientes\\_de\\_trabajo\\_y\\_estudio](https://www.academia.edu/39038694/Detección_de_voces_y_otros_ruidos_en_ambientes_de_trabajo_y_estudio)
- Author. *Automatic pitch recognition in a computer game interface*. Ingeniería 25 (1): 13-33, ISSN: 2215-2652; 2015. San José, CR. 2015. <https://doi.org/10.15517/ri.v25i1.11751>.

## HOBBIES

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- Amateur recorder player with a taste on Bach, Bethoven, and *Juan Luis Guerra y La-440*.
- Tireless reader with an affinity for Victor Frankl logotherapy.
- Horticulture (need to survive the Armageddon somehow).
- Citizen science projects, like the Japan Safecast group.