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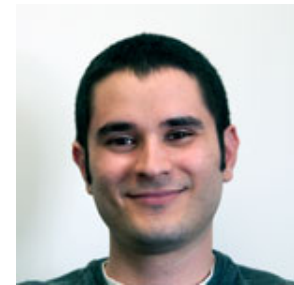
Experience

Yield engineer, Intel Corporation, Hillsboro, OR **07/2014–present**
- Earned outstanding performance review after first full year at job (top 6% in group)
- Experienced with wafer UV laser inspection tool and SEM for defect metrology
- Improved position correlation algorithm leading to defect positioning accuracy by more than 60%
- Re-purposed position correlation algorithm to predict a 95% reduction of failure correlation radius
- Trained robust SVM and random forest ML classifiers for reducing misdetections by more than 50%
- Implemented SPC charts/dashboards for real-time monitoring of tool health
- Developed scripts for ETL tool logs for easy failure root cause analysis

Research Assistant, Joint Quantum Institute, College Park, MD **05/2009–05/2014**
Optics / Physics:
- Built high finesse tunable Fabry-Perot optical cavity
- Designed optical systems for laser beam sizing, filtering, injection locking, fiber coupling
- Tuned Ti:Sapphire laser power performance 60% beyond specs
- Designed control systems for frequency stabilization of lasers and resonators (< 1 MHz)
- Designed and implemented neutral rubidium slow high density atomic beam (< 20 m/s)

Computational:
- Experienced using linear and non-linear regressions on data
- Developed MATLAB atom-light coupling MC simulation achieving qualitative agreement with experiment
- Developed ROOT/C++ atomic beam MC simulation to guide experiment design decisions
- Developed C/C++ utility for fast correlation analysis of raw data
- Developed MATLAB script for data-to-data fitting, comparison and visualization
- Administered several Linux systems in lab

Hardware:
- Designed and assembled PCBs for buffer circuits and photo-diode detectors
- Implemented RF system for fast triggering (< 500 ns delays)
- Used Arduino boards to make temperature (< 0.1 C) and laser power (< 1 mW) stabilizers

Mechanical:
- Designed several opto-mechanical mounts. Built by machine shop and implemented in experiment
- Made multiple modifications on parts using mill, laithe, band saw, grinder and drill press
- Designed and built high vacuum chamber (10^{-9} Torr)

Communication:
- Scientific writing: co-author of 7 research papers
- Technical presentations: 4 contributed talks at conferences

Leadership:
- Lead student researcher from 2010
- Mentored of 5 undergraduate students

Teaching Assistant, University of Maryland, College Park, MD **08/2008–12/2009**
- Taught physics fundamentals to a large variety of majors
- Earned excellent TA reviews

Trainee, Laboratoire de Physique Nucléaire et de Hautes Energies, Paris, France **05/2006–11/2006**
Topic: Analysis of Top anti-Top decays in the lepton plus jets channel at the ATLAS experiment
- Experienced with large team collaborations
- Delved into large legacy code base for analysis of Monte Carlo simulated data

- HELEN complementary training fellowship

Teaching Assistant, Universidad de Los Andes, Mérida, Venezuela　　　　　　　　　**10/2004–03/2006**
- Taught multivariable calculus only a few semesters after taking the class

Education

PhD in Physics, 3.8, University of Maryland, College Park, MD　　　　　　　　　　**05/2014**
Topic: Control and quantum feedback on a ground-state superposition in a cavity quantum electrodynamics system

MS in Physics, 3.8, University of Maryland, College Park, MD　　　　　　　　　　　**12/2010**

BS in Physics, 19.5 / 20, Universidad de Los Andes, Mérida, Venezuela　　　　　　**01/2007**
Summa Cum Laude

Skills

Scientific: Optics, Lasers, Experimentation, Data analysis, Vacuum chambers, Simulations, Regression analysis, Machine learning

Programming: Python, C/C++, SQL, git, Shell scripting, Root, HTML, CSS

Software: MATLAB, Mathematica, Gnuplot, LabVIEW, Autodesk Inventor, Excel

Other: LaTeX, Linux, PCB design, Arduino, Machining, Clean room, SPC, ETL

Languages: Spanish (native), English (fluent), French (moderate), Italian (basic)

Publications

[1] Cimmarusti, A. D. *et al.* Environment-assisted speed-up of the field evolution in cavity quantum electrodynamics. *Phys. Rev. Lett.* **114**, 233602 (2015).

[2] Cimmarusti, A. D. *et al.* Feedback in a cavity qed system for control of quantum beats. *EPJ Web of Conferences* **57**, 03005 (2013).

[3] Cimmarusti, A. D. *et al.* Control of conditional quantum beats in cavity qed: amplitude decoherence and phase shifts. *New J. Phys.* **15**, 013017 (2013).

[4] Norris, D. G., Cimmarusti, A. D., Orozco, L. A., Barberis-Blostein, P. & Carmichael, H. J. Spontaneous creation and persistence of ground-state coherence in a resonantly driven intracavity atomic ensemble. *Phys. Rev. A* **86**, 053816 (2012).

[5] Norris, D. G., Cimmarusti, A. D., Orozco, L. A., Barberis-Blostein, P. & Carmichael, H. J. Anomalous light shift through quantum jumps in quasiresonant rayleigh scattering. *Phys. Rev. A* **85**, 021804 (2012).

[6] Cimmarusti, A. D., Crawford, J. A., Norris, D. G. & Orozco, L. A. Enhancements to cavity quantum electrodynamics system. *Rev. Mex. Fis. S* **57**, 0029 (2011).

[7] Norris, D. G., Cimmarusti, A. D. & Orozco, L. A. Conditional control of quantum beats in a cavity qed system. *J. Phys.: Conf. Ser.* **274**, 012143 (2011).

[8] Cimmarusti, A. D. Analysis of top anti-top decays in the lepton plus jets channel at the atlas experiment. Undergraduate thesis Universidad de Los Andes (2007). URL `http://www.saber.ula.ve/handle/123456789/16852`.