

Madison Dimaculangan

DATA SCIENTIST

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Diligent data scientist and former test engineer in the semiconductor industry eager to apply skills developed over a 12-year career and continue expanding proficiency in data science concepts and tools. Organized, responsible, and an excellent communicator and team player possessing a strong work ethic to drive organizational and personal success.

SKILLS

Programming Languages

- Professional experience with C++, Java, Ruby, and Perl.
- Training in Python, HTML, CSS, and JavaScript

Data Science

- Python data science libraries, including NumPy, Pandas, Scikit-Learn, Matplotlib, and Seaborn.
- SQL programming and PostgreSQL database management system.
- Exploratory Data Analysis including data cleaning, data exploration, and feature engineering.
- Supervised learning including Naive Bayes classification and linear regression.
- Projects can be found via GitHub link provided in the header of this document.

Semiconductor Hardware Test

- Credence Sapphire and Verigy 93000 testers for validation, debug and performance characterization
- System/platform level testing for validation, debug, and performance characterization

General Skills

- Requirements gathering and test plan documentation
- Software and hardware debug
- Data analysis, including linear regression and outlier root cause
- Workflow management, including JIRA and Kanban

AWARDS & ACCOMPLISHMENTS

Awards

- **AMD Executive Spotlight Award**, 2016
- **AMD Spotlight Award**, 2018, 2016, 2008
- **AMD Spirit of Success Award**, 2012

Accomplishments

- Root caused fuse IP fails and validated fixes, resulting in 30% yield recovery
- Root caused security IP fails and implemented workaround, resulting in 15% yield recovery

- Improved production screen for thermal IP, reducing test cost by \$2.5 million
- Identified failure mechanism for graphics Scan fails, resulting in 95% yield recovery
- Reduced test time of characterization flows by 25% by with efficient search algorithm

PROFESSIONAL EXPERIENCE

Training and Caregiving, Austin, Texas

2018 - Present

Student & Parent (2018 - Present)

Providing child care while continuing technical self-improvement via online training courses.

- Training in Data Science concepts with a goal to specialize in Deep Learning and Big Data
- Trained in Python, including data analysis libraries: NumPy, Pandas, and Matplotlib
- Trained in HTML, CSS, and JavaScript, developing skills in full-stack web development
- Providing care to twin boys, including feeding, bathing, cleaning, and entertaining

Advanced Micro Devices, Austin, Texas

2008 - 2018

Silicon Debug Lead (2018)

Managed technical issues originating internally or reported by the customer, driving debug and resolution.

- Recognized with a Spotlight Award for enabling on-time delivery of engineering samples to the customer while under a significant time crunch and overcoming infrastructure delays and limitations
- Triage and prioritized internal and customer issues, drove internal debug execution, and summarized root cause, workarounds, fixes, or enhancements.
 - Coordinated debug effort across design, validation, software, and production teams.
 - Communicated with external customers, ensuring alignment on priorities and progress.
- Directly executed validation and debug efforts as resource and time constraints necessitated.
 - Root caused false thermal shutdowns on system platforms to incorrect board connection to signal with hardcoded temperature threshold
 - Executed experiments on internal platforms to replicate customer failure observations, isolated failures, and provided feedback to designers and IP teams
 - Assembled and delivered system platforms to engineers for bringup

Product Engineer (2013 - 2018)

Executed product performance characterization and spearheaded failure investigation and resolution efforts.

Debug Lead:

- Triage internal issues, prioritized according to impact, and drove debug execution
- Recognized with Spotlight Awards for root cause and resolution of issues across functional areas
 - Root caused issue with third-party fuse IP, implemented additional defect screening, and

- validated design fixes resulting in 30% pass rate recovery
- Root caused issue with third-party security IP, executed experiments to confirm issue was identical to one existing in a previous design, and implemented workaround in test program resulting in 15% pass rate recovery across multiple functional areas affected
- Project managed thermal IP issue, drove meetings and collaboration between test, platform validation, and device analysis engineers and IP designers, and implemented an enhanced defect screen in production program, reducing test cost by \$2.5 million with 6 months
- Designed experiments to test hypotheses, executed experiments and analyzed results

Product Engineer:

- Coordinated content enablement across functional areas for integration into characterization flows
 - Gathered hardware and software requirements to implement and execute characterization
 - Generated optimized characterization strategy and timeline execution to meet aggressive schedule
 - Overhauled existing Java characterization infrastructure, enabling run-time adjustment of parameters thus eliminating re-compilation of code, allowing for quicker turnaround of characterization data in response to changing customer requests
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SCAN Test Engineer (2012 - 2013)

Validated Scan patterns, executed pattern characterization, and debugged Scan failures.

- Generated and executed test plan for SCAN pattern bringup and production flow integration
 - Aligned with design teams on pattern delivery schedules and pattern quality expectations
 - Implemented production screen and characterization flows for both Sapphire and 93k platforms
 - Debugged pattern bringup failures and production yield fallout
 - Root-caused zero-yield observation on GPU IP to initialization sequence by segmenting patterns and applying different voltages to each segment thus isolating failure
 - Root-caused multiple IO IP patterns to various pattern quality issues including missing signals, inverted expected values, and incorrect initialization sequences.
 - Summarized pattern delivery misses in a product post-mortem, resulting in a cross-team strategy to improve pattern quality for future products
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System Level Test Engineer (2008 - 2012)

Validated applications, regressed applications to identify performance-limiters, and debugged production failures and customer returns.

- Recognized with Spirit of Success Award for fast tracked production enablement of Brazos product, AMD's and industry's first platform to combine both a CPU and GPU into a single silicon die
 - Aligned with non-Brazos managers and engineering teams to re-prioritize Brazos product
 - Identified slack time and redundancies in execution schedule to pull in milestones
 - Implemented test programs enhancements to reduce validation and characterization test time
- Implemented and executed Ruby content validation and characterization flows
 - Implemented application repeatability flow to determine the stability of applications and

- highlight inter-application dependencies
 - Streamlined existing two-step frequency search algorithm into single phase, reducing test time for all frequency searches
- Executed performance-limiter studies across entire content suite to optimize characterization list
 - Implemented innovative ranking methodology to identify applications that most limited performance (maximum frequency and minimum voltage)
 - Implemented scripts to automatically execute regression, parse log outputs, perform analysis and generate reports summarizing application rankings and offsets from worst-case performance limiter

EDUCATION & TRAINING

- **Bachelor of Science in Electrical Engineering**, *The University of Texas at Austin*, Austin, Texas
- **Data Science Flex**, *Thinkful*, online
- **The Complete 2019 Web Development Bootcamp**, *Udemy*, online
- **Complete Python Bootcamp: Go from zero to hero in Python 3**, *Udemy*, online