# Anthony P. DeLuca anthony@anthony-deluca.com | (631) 521 – 1346 | www.anthony-deluca.com

## Work Experience

Intelligent Product Solutions (Apr 2017 – Current)  
Machine Learning Project Desktop App – Lead Software Developer  
Technologies: TypeScript, JavaScript, RxJs, Lodash, Pixi, React, Node, Electron, node-gyp, C, C++

* Leadership & Architecture: Led the design and implementation of a desktop app to manage machine vision projects, ensuring an on-time alpha launch under high-pressure deadlines.
* UI Framework**:** Architected a custom visual component system using Pixi to represent project data on a canvas; integrated undo/redo and robust history tracking for flexible project editing.
* Data Management**:** Incorporated RxJs and Lodash to handle complex state transitions and data manipulation, streamlining a reactive data flow.
* Native Integration**:** Created a node-gyp package to bridge the UI and C++ core library, enabling seamless communication for real-time project setup and execution.
* Client Collaboration**:** Gave sprint demos, led feature/bug discussions, and guided the team within a well-defined framework for consistent product growth.

Kepler Prediction Engine – Designer & Architect  
Technologies: Python, NLP, AI Models

* Opportunity Analysis**:** Created AI models to identify similar companies based on historical win/loss data and LinkedIn profiles.
* Data Crawling**:** Implemented LinkedIn crawling for real-time company insights (industry, size, location).
* Nearest-Neighbor Engine**:** Built a comparison algorithm to find high-potential leads for business development.

Apollo Lead-Generation System – Designer & Architect  
Technologies: Python, AI Models, scikit-learn

* Predictive Analytics**:** Leveraged scikit-learn to forecast high-value leads using historical data.
* Feature Exploration**:** Experimented with advanced regressors (e.g., MLPRegressor) for robust predictions.
* Scalable Architecture**:** Laid the groundwork for integrating additional data sources (like LinkedIn and internal CRM).

Athena Conversational AI Framework – Designer & Architect  
Technologies: Python, NLP, Hugging Face QA Models

* Offline QA System**:** Developed a lightweight, secure NLP solution for question-answering without relying on cloud services.
* Automated Data Processing**:** Scraped Confluence and structured the data into labeled training sets for on-prem QA.
* Adaptive Learning**:** Experimented with Hugging Face QA models, enabling context-aware offline queries.

Bubblegum – Machine Vision Grading System - Designer & Developer  
Technologies: Python, Machine Vision (OpenCV)

* Proof of Concept**:** Demonstrated how machine vision could automate baseball card grading from images.
* Damage Detection**:** Created algorithms to measure edges, centering, and wear for condition scoring.
* OpenCV Integration**:** Tested advanced library features for high-accuracy image analysis.

PreReq Requirements Extraction System – Designer & Architect  
Technologies: Python, NLP, POS Tagging

* Requirement Extraction**:** Built an NLP tool using POS tagging to parse unstructured PDFs and identify key project requirements.
* Structured Outputs**:** Created workflows that convert identified requirements into actionable formats for project planning.
* Automation**:** Reduced manual overhead in documentation processes, enhancing clarity for large-scale projects.

RFID Surgical Table Interface – Software Developer  
Technologies: C, TypeScript, Socket.IO, Express.js, Node, node-gyp

* Hardware Integration**:** Built a C driver for RFID scanners and wrapped it with node-gyp for desktop application communication.
* Communication Protocol**:** Defined protocols to drive the RFID scanners and relay scan data back to the UI in real time.
* Thin Server Layer**:** Implemented a lightweight Express/Socket.IO server to manage commands and stream RFID outputs to a central interface.
* UI & Demo**:** Created a real-time grid to display RFID readings for instrument tracking; showcased an early-stage neural network prototype for potential triangulation of tag locations.

Smart Piano App and Service – Software Developer  
Technologies: Swift, RxSwift, Java, STOMP protocol, GStreamer, Linux

* Broadcast Streaming**:** Eliminated a 90-minute streaming cap by overhauling GStreamer/Kinesis pipelines, enabling extended live piano performances.
* Hardware Migration**:** Updated code and libraries to integrate new hardware, maintaining stable performance during high-profile concerts.
* Pipeline Optimization**:** Enhanced GStreamer for advanced features like screen rotation and real-time audio/video synchronization.
* Reactive Transition**:** Migrated critical Swift components to RxSwift, improving state management and responsiveness across multiple external connections.
* STOMP Integration**:** Retrofitted the Java service to use STOMP for real-time performance messaging and event handling.

*Online Education Portal – Software Developer*Technologies: JavaScript, React, Redux, Node

* Content Management**:** Developed critical front-end UI and content organization tools for a searchable K–12 curriculum database.
* Redux Actions**:** Implemented Redux to manage global state changes, ensuring consistent data flows.
* Advanced Filtering**:** Created robust filtering/sorting features to help educators quickly find relevant curriculum resources.
* PDF Annotation**:** Integrated and customized an open-source PDF reader for in-platform annotation and highlighting.
* Responsive Layouts**:** Ensured the web-based portal worked seamlessly across diverse screen sizes and devices.

Reverse Engineering for Software Activation – Security Engineer

* Software Recovery**:** Reverse-engineered a critical business application after the original developer became unresponsive, preserving the client’s investment.
* Licensing Bypass**:** Analyzed and modified licensing files to reactivate expired software for continued operations.
* Adaptability**:** Demonstrated rapid upskilling in reverse engineering techniques under high stakes.

*Penetration Testing – Lead Security Engineer*

* Domain Takeover**:** Discovered key vulnerabilities, achieving full network control in IPS’s first penetration testing engagement.
* CEH Certification**:** Leveraged Certified Ethical Hacker methodologies and tools to simulate real-world cyberattacks.
* Reporting & Remediation**:** Compiled a comprehensive vulnerability report with risk assessments and immediate action steps.
* Service Launch**:** Established penetration testing as an official offering for the company.

Cybersecurity Pillar Leadership – Cybersecurity Lead

* Service Packages**:** Designed cybersecurity offerings (penetration testing, vulnerability assessments, training) to expand IPS’s service portfolio.
* Red vs. Blue Exercises**:** Organized simulation events to improve defenses and test readiness within internal and client IT teams.
* Training & Mentorship**:** Developed and delivered security workshops, championing a security-first mindset.
* Strategic Alignment**:** Formed a dedicated Cybersecurity Pillar, aligning service growth with company objectives.

Angular Micro-Frontend Development – Lead Software Developer  
Technologies: Angular, Micro-Frontend Architecture

* Micro-App Architecture**:** Built and integrated a patient lookup micro-frontend within a larger healthcare system.
* Memory Debugging Too**l:** Developed a real-time memory graph utility that visualized allocation/timeline data for troubleshooting performance.
* Scalable Angular**:** Employed the latest Angular features to ensure clean, maintainable code across multiple micro frontends.

Smart Lighting Solution Connectivity Bridge – Lead Software Developer  
Technologies: TypeScript, Node, Express.js, Mongo

* Architecture**:** Designed and developed an Express server to handle smart lighting requests, including device grouping and state management on a local wireless network.
* Mobile Application Integration**:** Collaborated on the mobile app that controlled lights; ensured the API endpoints meshed seamlessly with the front-end.
* Database Design**:** Leveraged MongoDB for scalable and efficient device state storage.
* OTA Updates**:** Built a robust over-the-air (OTA) update management system to streamline firmware updates.
* Acquisition Impact**:** Delivered critical features under tight timelines, contributing to a successful product demo that led to the solution’s acquisition by Ring.

*Stock Analysis Backend Algorithms – Software Developer*Technologies: Python

* Data Pipeline**:** Designed and implemented backend tools for analyzing stock trading patterns, capturing real-time open/close prices and volume data.
* Daily Processing**:** Built an automated pipeline to fetch large lists of tickers, parse metrics, and push data to a Python-based web framework for visualization.
* Performance Tuning:Optimized the system for scalable data handling, enabling daily batch updates without downtime.

Blood Donor Portal – Lead Developer  
Technologies: React, AWS Serverless, API Gateway, Lambda

* Frontend Experience**:** Implemented a React-based UI for donors, focusing on a seamless and intuitive experience.
* Serverless Backend**:** Architected an AWS ecosystem (API Gateway, Lambda) for scalability and easy maintenance.
* Automated Deployments**:** Designed CI/CD pipelines for rapid version releases.
* API Specifications**:** Managed backend logic and auto-generated endpoints based on evolving donor requirements.
* Team Leadership**:** Oversaw full-stack development, ensuring alignment between business needs and technical solutions.

Home Security Application – Lead Software Developer  
Technologies: Angular, JavaScript, C#, ASP.NET MVC

* Wizard Architecture**:** Implemented a multi-step configuration wizard for an alarm system, modernizing the user setup process within a legacy codebase.
* System Integration**:** Adapted existing pages/routing and overcame challenges of a secured jump server in a fragmented environment.
* Team Guidance**:** Acted as Lead by helping fellow developers integrate wizard steps, ensuring an on-time rollout of the new setup flow.
* Outcome: Simplified end-user onboarding and mitigated complexity in the underlying legacy system.

Temperature Monitoring IoT Device – Software Developer  
Technologies: React Native, Node.js

* Cross-Platform App**:** Developed a React Native application for iOS and Android tablets, delivering real-time temperature updates from IoT sensors.
* Data Polling & Sync**:** Implemented a polling system to retrieve frequent temperature readings from devices, ensuring reliable, up-to-the-minute data.
* UI Enhancements**:** Fixed and refined the device configuration UI, boosting usability and performance.
* Deployment**:** Successfully pushed the iOS version to the App Store under tight timelines.

Maui App Development – Software Developer  
Technologies: Maui Framework

* Framework Migration**:** Transitioned an existing mobile application from Xamarin to Maui, resolving compatibility issues and performance bottlenecks.
* UI Updates**:** Improved layouts and formatting for cross-platform consistency and speed.
* Feature Enhancements:Contributed bug fixes and new functionality to align with evolving project requirements.

Viventium (Jun 2015 – Jan 2017)  
QA Developer  
**Technologies: TypeScript, Protractor, TeamCity**

* End-to-End Testing**:** Created and maintained Protractor-based E2E test suites for Angular applications, improving test coverage and reliability.
* TeamCity Integration**:** Updated TeamCity configurations to include automated E2E runs, ensuring continuous integration and immediate feedback on builds.
* Scalability & Maintenance**:** Developed page object models to keep tests flexible and maintainable across multiple product releases.

Intelligent Data Systems (Jul 2014 – May 2015)  
Software Developer  
**Technologies: ASP.NET MVC, JavaScript, jQuery, Bootstrap, Angular, Google Maps API, PhoneGap**

* Academy Bus Website:Built ASP.NET MVC views, scripts, models, and controllers; wrote stored procedures to handle new functionality in a production environment.
* Google Maps Integration**:** Implemented an interactive vendor map via Google Maps API, enhancing the user experience and allowing for real-time location data.
* Client Updates**:** Maintained and fixed various web and mobile apps (Angular, ASP.NET, PhoneGap) as needed.
* Rapid Response:Provided emergency patches at management’s request, mitigating production issues in tight timeframes.

Independent Resource Networks (Feb 2009 – Mar 2014)  
Mobile Application Architect & Developer  
**Technologies: jQuery Mobile, Backbone.js, PhoneGap, ASP.NET**

* Multiplatform Banking App**:** Designed and developed a cross-platform mobile banking application using jQuery Mobile and Backbone.js for a smooth user experience.
* Backend Services:Created ASP.NET web services to securely handle sensitive financial data and integrate with company infrastructure.
* Data & Algorithm Design:Architected secure algorithms and data structures for robust financial transaction management across multiple clients.

Mobile App Team Leader

* Leadership**:** Led a team of two junior developers, overseeing the MCR Mobile Application expansion and updates.
* Task Estimation**:** Delivered accurate timelines and milestone planning to upper management, ensuring on-schedule releases.
* Mentorship**:** Provided technical guidance on frameworks (Backbone, PhoneGap) and best practices, fostering a collaborative team environment.

Help Desk / In-Home Support

* SharePoint Utility**:** Developed a C#.NET web part for SharePoint, allowing management to retrieve phone call logs from a database.
* BAT Utility**:** Created a script to resolve port conflicts among multiple programs, reducing downtime.
* IT Support**:** Handled computer issues (software/hardware) locally and remotely, reinforcing an efficient and reliable infrastructure.

Stony Brook University (Sep 2011 – Dec 2011)  
CSE Teacher’s Assistant  
**Technologies: Java**

* Instruction**:** Provided hands-on guidance in fundamental Java programming concepts, helping students overcome learning hurdles.
* Lab Support:Assisted in debugging assignments, clarifying object-oriented principles, and promoting a deeper understanding of programming logic.

Geek Squad (Aug 2007 – Feb 2009)  
Agent

* Technical Repairs: Diagnosed and fixed complex PC issues, including registry hive repairs, malware removal, and hardware swaps (RAM, HDDs, motherboards).
* Customer Service**:** Provided backup solutions and training on Windows and MS Office basics, ensuring positive in-store experiences.
* High-Value Repairs: Honored as store VIP and assigned the most challenging computers, normally slated for reformatting.

*Sales Analysis and Advertisement*

* Demand Forecasting**:** Tabulated weekly services and predicted future demand, helping management optimize staff scheduling.
* Communication**:** Provided leadership with insights on upcoming sales bundles and promotional strategies.
* Advertising**:** Created weekly service bundle ads that boosted store revenue and customer awareness.

Motorola Solutions (Formally Symbol Technologies) (Jan 2006 – Aug 2006)

*Engineering Customer Response Team (ECRT)*

* Web-Based Inventory Control**:** Designed and developed a web program to track and manage testing equipment inventory.
* Windows Mobile Testing**:** Performed QA on Windows Mobile apps for portable data terminals, identifying bugs and performance issues.
* Hardware Experience**:** Collaborated with various portable data terminals and operating systems, enhancing device reliability and user experience.

## ****Technical Competencies****

Front End

* **Languages**: TypeScript, JavaScript, Swift
* Frameworks**:** Angular, React, React Native, Vue, jQuery, Backbone.js, JavaServer Faces
* Libraries**:** RxJs, PixiJS, Lodash, RxSwift, RxCocoa, jQuery Mobile
* UI/Visualization**:** Swing (Java), Canvas (for digit drawing & real-time rendering)
* Testing**:** Jasmine, Enzyme, Jest, Protractor

****Back End****

* **Languages:** C#.NET, Java, PHP, Prolog
* Frameworks**:** ASP.NET MVC, ASP.NET Razor, Entity Framework, Express.js, Hibernate
* Libraries**:** AutoMapper, SimpleInjector, HtmlAgilityPack
* Testing/CI**:** MSTest / NUnit / xUnit, JUnit, TeamCity

****Database****

* **Languages:** T-SQL, MySQL, Access, SQLite, SQLCipher
* Frameworks**:** Entity Framework, Hibernate, MongoDB

****Desktop****

* **Compiled Languages:** C, C++, C#, Java, Groovy
* Scripting Languages**:** Python, R, MATLAB, Bash, Prolog
* Frameworks**:** Java Swing, Electron
* Testing**:** Unit Test (C#), CUnit, JUnit
* Debugging**:** Valgrind, GDB

****Mobile****

* **Platforms:** Android, iOS
* Frameworks**:** Bootstrap, PhoneGap, jQuery Mobile, React Native
* Libraries**:** jQuery Mobile, Google Maps API (Android location-based apps)
* Tools**:** Android Studio, ADT

****Development****

* **Version Control**: Git, SVN, Team Foundation, GitHub, GitLab
* Package Managers**:** NuGet, NPM, Grunt, Bower, CocoaPods
* Integration**:** TeamCity, Bamboo
* Environments**:** Visual Studio, IntelliJ, LINQPad, SQL Server Management Studio, MySQL Workbench, Eclipse, NetBeans, WebStorm, PyCharm, RStudio, Visual Paradigm
* Tools**:** Libtool, Autoconf, Automake, OpenSSL

****Operating Systems and Servers****

* Linux/Unix Distros****:**** Ubuntu, Solaris, Mint, CentOS, FreeBSD, macOS
* Servers: IIS, Apache Tomcat, Apache Glassfish, Node, Selenium
* **Virtual Machines**:**** VMware, VirtualBox

## Projects

IBM Watson Slot Grammar Parser  
Technologies: Java

* AI Exploration**:** Independently studied IBM Watson’s Slot Grammar approach for NLP, implementing fundamental parsing techniques in Java.
* Proof of Concept**:** Built an early parser capable of analyzing basic sentence structures, demonstrating foundational slot grammar concepts.
* Hands-On NLP**:** Gained insight into grammar-based natural language processing, laying groundwork for more advanced AI/NLP projects.

Neural Network VisualizationTechnologies: Java, Swing

* Interactive Neural Net Demo**:** Designed and coded a real-time neural network visualizer where users classify positive/negative points on a grid.
* Gradient Mapping**:** Incorporated a color-gradient overlay (red for positive, blue for negative) to show classification strength dynamically.
* User-Controlled Learning**:** Provided adjustable learning rate sliders for hands-on exploration of how neural nets adapt and converge.

Gaussian Mixture Visualization Demo  
Technologies: JavaScript, Java Servlets

* GMM Visualization**:** Created an interactive Gaussian Mixture Model tool in pure JavaScript, showing red/blue distributions shifting as the model learns.
* Live Updates**:** Leveraged Java Servlets for heavier computations, maintaining a smooth user experience on the front end.
* Outcome**:** Offered an intuitive demonstration of unsupervised machine learning principles (e.g., hidden cluster discovery) in real time.

Nearest Neighbors OCR DemoTechnologies: JavaScript, jQuery, MNIST Dataset

* Interactive OCR Tool**:** Implemented a Nearest Neighbor classifier to recognize handwritten digits from the MNIST dataset.
* Canvas Input**:** Allowed users to draw digits directly on a web canvas and adjust the “N” parameter in real time to see changing predictions.
* Live Feedback**:** Provided immediate classification results, showing the flexibility of nearest neighbor methods for digit recognition.

Decision Trees DemoTechnologies: JavaScript, jQuery

* Interactive Decision Tree**:** Built a live, entropy-based decision tree generator where users input tabular data to observe recursive splits.
* Visualization**:** Displayed entropy calculations for each node split, explaining the model’s decision-making.
* Experimentation Interface**:** Allowed toggling of different splitting criteria, demonstrating how decision trees adapt to input changes.

Spaced Repetition Mobile AppTechnologies: PhoneGap, JavaScript, SuperMemo Algorithm (SM-11)

* Learning Motivation**:** Developed a proof-of-concept mobile app employing Spaced Repetition to optimize study sessions and memory retention.
* Algorithm Integration**:** Implemented SuperMemo’s SM-11 for scheduling review intervals based on user performance.
* PhoneGap Platform**:** Packaged the JavaScript-based front end into a cross-platform mobile application.

Sudoku SolverTechnologies: Prolog

* Constraint Solving**:** Developed a Sudoku solver in Prolog to learn logical backtracking and pattern matching.
* Demonstrated Prolog Strengths**:** Showcased how a declarative language excels at constraint-based problem solving.
* Skill Expansion**:** Broadened programming expertise by working outside of procedural/OO paradigms.

Toy Language ParserTechnologies: Python

* Proof of Concept**:** Created a custom scripting language in Python, featuring basic loops, variables, and a rudimentary execution environment.
* Parser & Interpreter**:** Experimented with lexical analysis, parsing, and context management, gaining a deeper understanding of language internals.
* Purpose**:** Served as a self-driven study in language design and interpreter construction.

RSA Algorithm ImplementationTechnologies: C

* Encryption/Decryption**:** Implemented RSA in C, using OpenSSL-compatible keys for data encryption/decryption.
* Key Handling**:** Developed code to parse and integrate existing OpenSSL keys into the encryption workflow.
* Cryptography Foundations**:** Built and tested the project to reinforce theoretical knowledge of public-key cryptography.

Online e-Book LibraryTechnologies: Java, JavaServer Faces, JSP, Hibernate, MySQL

* Library System**:** Constructed a demo e-book library website, including search functionality and catalog browsing.
* Persistence Layer**:** Utilized Hibernate for ORM and integrated MySQL for structured data storage and retrieval.
* Team Collaboration**:** Coordinated with peers to populate the library and refine UI/UX for a comprehensive class project.

Zombie GPS GameTechnologies: Java, Android

* Real-Time GPS Mechanics**:** Created a location-based mobile game where zombies chase the player’s live GPS location.
* Integration**:** Tied Google Maps API with Android’s location framework to visualize zombie positions on the map.
* Outcome**:** Delivered a fun, functional proof-of-concept, showcasing real-time data updates and mobile game loops.

Unix Utility PortingTechnologies: C, Linux

* GNU Build System**:** Ported the open-source Skey Unix utility across multiple Linux/Unix flavors (Ubuntu, Solaris, Mint, CentOS, FreeBSD, macOS).
* Cross-Platform Support**:** Resolved platform-specific compatibility issues, producing a single build that ran on diverse OS targets.
* Toolchain Mastery**:** Gained in-depth experience with Autoconf, Automake, Libtool, and other GNU tools for reliable cross-platform compilation.

Clinical Trial Matching System  
Technologies: Java, Hibernate

* Purpose**:** Built a system to match patient “chief complaints” to suitable clinical trials in real time.
* Data Search**:** Leveraged Hibernate to query trial records, experimenting with different matching logic for greater relevance.
* Experimental Implementation**:** Laid the conceptual framework for a larger, more accurate trial recommendation engine.

Lego MindStorms Line-Following Robot – Early Robotics Project  
Technologies: Java, Lego MindStorms

* Autonomous Navigation**:** Programmed a line-following robot using sensor feedback, executed in Java.
* Sensor Integration**:** Tuned input thresholds for real-time directional adjustments, exploring fundamental robotics principles.
* Hands-On Experimentation**:** Built this project to develop hardware/software troubleshooting skills and refine problem-solving under constraints.

Recommendation Engine for Reddit LinksTechnologies: Java

* Machine Learning Application**:** Created a Bayesian recommendation engine predicting user interest in various Reddit links.
* Data Processing**:** Trained on user interaction metrics, providing a probability score for each recommended link.
* Outcome: Explored Bayesian methods for personalized content filtering, reinforcing ML fundamentals in a practical setting.