

# Nick Polyak (Ph. D)

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## Professional Summary

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An innovative and self-driven engineer with 15+ years of comprehensive expertise in building, architecting and leading successful and scalable product development using C#, .NET, ASP.NET, NuGET, Automation (with Xunit and other testing frameworks), MongoDB, .NET Entity Framework, WPF, Avalonia (multiplatform WPF), Docker, Python, FastAPI, NodeJS, JavaScript (with ES6/ES7), Typescript, React, NextJS, RESTful API, Azure DevOps, SQL Server and Github Copilot. Extensive experience migrating legacy application to WPF (or similar multiplatform frameworks - Avalonia and UNO). I also have a great understanding of cloud computing (Azure and AWS), databricks, python packages for processing big data and CI/CD pipelines.

## Skills and Technologies

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- **Software Languages:** C#, Python, SQL (T-SQL, PL/SQL, Spark SQL and DataBricks SQL), Java, C++
- **Software Packages:** .NET Core, ASP.NET, TPL, async/await, Xunit, FastAPI, WCF, React, Angular, WinForms, .NET Entity Framework, Rx.NET, WPF, XAML multiplatform packages (including Avalonia and UNO), MongoDB, PySpark, Databricks, AWS, Azure, Pandas, Numpy, Matplotlib, DBUtils, HTML5, JavaScript, Typescript, jQuery, gRPC
- **Platforms:** Windows, MacOS, Web, Mobile, Linux
- **Paradigms:** Very strong understanding of MVVM pattern, Cloud Computing, Databricks, Microservices, design patterns, OOD/OOP, distributed computing principles, Observable Streams, parallel computing and Client/Server applications. I practice Test Driven or Prototype Driven Development.
- **Work Environment:** Agile, Git, Github, TFS, Jira, SVN, Azure DevOps, Cross-Functional Teams, Mentoring/Evangelizing new technologies
- **Modernization:** Building new cross-platform applications and migrating legacy single-platform applications into newer cross-platform technologies to run on multiple client platforms.
- **Technological Contribution:** Open-Source contributions (<https://github.com/npolyak>). Published numerous articles on codeproject.com. Avalonia MVP. Created the Avalonia multiplatform UniDock docking framework. CodeProject MVP 2024, 2023, 2022 and before.

## Education

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### Ph.D. Electrical, Computer and Systems Engineering

Rensselaer Polytechnic Institute

## Experience

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### Senior Developer | AwebPros.com

Jan 2025-Present

- Work on my own big data .NET analytics engine with Web/WPF/Avalonia front end and data residing in Azure and AWS datalakes. Use gRPC and REST protocol for communications between the clients and ASP.NET server.

**Senior Consultant | Sandwich Trading**

Jul 2024-Jan 2025

- Helped to architect and build the Avalonia (multiplatform version of WPF) Crypto-Currency trading application to run on Windows, MacOS and Web.
- Introduced the team to a new way of team software development – Prototype Driven Development (akin to Test Driven Development but used for building Desktop Applications).
- Mentored and assisted other team members in Avalonia, desktop application architecture and other software related matters.

**Senior Consultant | Kahuah**

Mar 2023 – May 2024

- Worked on multi-platform XAML software that runs as a Desktop application on Windows, in the Web browser via Web Assembly and as a mobile application on Android and iOS. Most of the code is shared between different platforms with the help of Uno packages.
- The data was coming to the client via RESTful services.
- Designed and built the Excel Spreadsheet view that allows to view and modify the Excel spreadsheets from within Kahua application.
- Designed and built the Gantt Charts control for displaying project milestones within Kahua application.
- Worked on numerous features and bug fixes.

**Senior Consultant | Enlightenment Research**

Oct 2022 – Feb 2023

- Worked on proprietary financial algorithms and their implementation in Python.
- Used Azure, ASW and Databricks for data storage and analytics.
- Used ASP.NET server, gRPC streams and RESTful services for getting data from the ASP.NET middle tier.

**Architect and Developer for ComposeUI | Morgan Stanley**

February 2022 – September 2022

Designed and created a fully functioning prototype of a framework for hosting multiple views/applications within dockable/floating pane.

- Introduced Prototype Based Programming for the ComposeUI team
- Built and wired a gRPC based communications mechanism allowing the applications to communicate with each other and with the server.
- Built a multiplatform framework of docking/floating windows each window could host a view from different processes including multiplatform Avalonia, WPF, WinForms and Web applications (via WebView2).
- Built the shell containing the server and the communications mechanism allowing the processes to contact the with the server via gRPC.
- Built a DWM shell for windows only that would prevent deadlocks when one process locks the whole application.

**Financial Algorithms Researcher and Developer | Enlightenment Research**

April 2021 – Feb 2022

- Worked on proprietary financial algorithms and their implementation in Python.

**Architect | ASML**

August 2020 – April 2021

- Worked as an architect/technical lead on two UI projects – Multi-beam UI and Universal Recipe Editor each of the projects had about 6 developers on them.
- Worked on designing, coding, mentoring, code reviews.
- Defined the flexible and extensible architecture for the projects.
- Designed and built the plugin infrastructure allowing to create the visual applications as a conglomeration of independent plugins.
- Delivered numerous public presentations on various subjects of UI project architecture and development including Prototype based development, Plugin architecture, MVVM pattern, Reusability, Unit Testing.
- Created numerous reusable WPF custom controls and behaviors.

**Senior Consultant | SRT Systems**

Mar 2018 – Dec 2019

- Designed and built several generic modules for the application including Authentication, Theming, Alerts, Keywords, Toolbars, Missions, Network Diagnostics.
- Re-architected parts of the wireless application, fixing the numerous bugs and speeding it up.
- Mentored junior developers.

**Senior Consultant | Capital Group**

Apr 2017 – Sept 2017

- Created new architecture for the Visual Components
- Created and styled most of the custom controls for the application including the numerous buttons, the combo boxes, the text boxes, the date picker, section controls etc.
- Evangelized and taught WPF best practices

**Senior Consultant | FlexTrade**

Oct 2015 – Dec 2016

- Created a Roslyn Based Rule Engine, allowing the expert users to create application components containing custom C# code that determines their behaviors. The code is dynamically compiled and becomes part of the application. The Roslyn powered functionality was providing the users with complete intelli-sense for the custom C# components.
- Designed and built a View Model component-based architecture for extending the application. Each VM component can be developed and tested separately and then placed into the application. Various components communicate between each other using so called Global Variables.
- Created Hot Buttons for the Trading Dashboard application. Such buttons can be dragged and dropped anywhere within the application UI and can be customized to perform different actions.
- Added several new various features to the Trading Dashboard application.
- Tutored other members of the team and helped them with understanding of WPF concepts.

**Project Lead/Architect | Franklin Templeton**

Jan 2013 – Oct 2015

- Designed and built the UI for the prize-winning Investment Dashboard product.
- Created View-Widget based architecture allowing to assemble various views out of widget very fast.
- Designed and built most of the widgets for the application – among them, Tables, TreeMaps, PieMaps, Charts.
- Built the geographical map showing distribution of change in investment over the globe.
- Built the detailed organization chart for the investment organization.

**Senior Software Engineer | Dimenssional Photonics International**

Oct 2011 – Aug 2012

- Designed and developed in record time a full-blown touch screen WPF based GUI application for taking 3-D dental scans.
- Created a library of custom controls and styles to be re-used across the application.
- Designed and built an iPad-like keyboard for this touch screen application with internationalization capabilities. Just like popular touch screen tablets and phones, the keyboard allows the user to choose special characters by pressing a corresponding key for a two-second time-period.
- Incorporated the C++ code that handles 3-d processing into the application.
- Adhered to a strict MVVM development.
- Fully internationalized the application.
- Created functionality for login, authorization/authentication, managing the users, and user permissions.
- Created functionality for auto-logout for the application.
- Created functionality for changing and monitoring system parameters like current time, date and time zone, and the battery. The application will be run in Kiosk mode, so that the clients won't have access to windows OS, so I had to provide ways to change the system parameters via the application.
- Created functionality for monitoring network connections (including wireless networks) and for managing wireless networks connections: one can type a password for WPA2-PSK connections, save a profile, connect to the wireless network using the saved profile. One can break a wireless connection and delete an outdated profile.

- Designed and developed GUI functionality for monitoring and controlling uploading the data to the back end.
- Designed and developed GUI functionality for the remote support of the application.

### **Architect Engineer Consultant | Fidelity**

Feb 2010 – Oct 2011

- Proposed and evangelized prototype-based development for the UI which involves creating small prototypes to nail down the business features and potential for code re-use and then assembling them into the application. Junior engineers will only be able to check in their code after it's been tested, and code reviewed as part of a prototype.
- Serve as the “code watchdog” ensuring correct application of the MVVM design pattern, good re-use, adherence to the styles.
- Lead a team of several engineers located in India. Serve as a business proxy/project lead for them.
- Work in close contact with the business owners/UI designers on the behaviors and the look and feel of the application.
- Built a number of generic visual and non-visual components that everybody else on the team reuses, including a data grid (built on top of the DevEx grid).
- Participate in design across the application tiers, nailing down the database and services contracts.

### **Senior Software Consultant | ITG Inc**

Sep 2009 – Dec 2010

Worked on a single stock trading application as part of an agile team.

- Worked in close contact with the product managers and graphic designers on nailing down the application look and behaviors.
- Use MS Expression Blend extensively designing the visual components and their behaviors.
- Taught a WPF to the developers to facilitate transition from WinForms to WPF and was one of the MVVM pattern evangelists.
- Integrated financial charting functionality into the application.
- Customized and extended some of Telerik's controls to comply with business requirements.
- Participate in work aimed at improving performance of the application.

### **Owner | AWebPros**

Sep 2008 – Sep 2009

- Build websites using HTML5, JQuery and Knockout.js.
- Building a WPF product with MS SQL server with ADO. Entity framework at the back end. Using WCF to connect to the back end from the UI application.
- Built a WPF application allowing to view information about Hedge funds for Five Nine Seventy Integration LLC.
- Freelance hands-on-help and mentoring in Enterprise Project Development.

### **Senior Software Engineer | ChartOne**

Aug 2007 – Sep 2008

- Developed a WPF front-end product connected to the oracle database via the WCF web services.
- Gave C# classes to ChartOne engineers.
- Ported old C++ code to .NET 3.5 and provided a managed interface to call it.
- Investigated oracle UCM functionality creating Web Services interface for calling some parts of it.
- Created notification agent in Java that gets the deficiency info from the DB and sends e-mail notifications about them to the corresponding users.
- Fixed numerous bugs and configuration issues related to the old product (Java, C++, UNIX).

### **Senior Software Engineer | VistaPrint**

Jan 2007 – Jul 2007

- Designed and developed the new shipping system including the functionality for shipping, closing and manifesting.
- Worked on supporting and fixing the current shipping system.
- Created a set of tools for populating rates of the shipping system and for testing it.