Michael Edgcumbe   developer@noisederived.com

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Biography

Michael is freelance developer at Secret Atomics with nine years of employment developing iOS applications, data explorers, interactive installations, and games. He has over twenty years of experience helping launch new products with venture-backed startups and companies like Google, Samsung, and Apple.

He collaborates with agile teams on research and documentation, UX design, hardware development, and custom fabrication. As an artist, he pursues a passion for natural interfaces combining real-time motion tracking and embedded device control. He attended the Wharton School at the University of Pennsylvania as an undergraduate in the Joseph Wharton Scholars Program and holds a graduate degree from the Interactive Telecommunications Program at New York University. He was awarded a National Merit Scholarship and is an Eagle Scout in the Boy Scouts of America.

Education

University	Degree	Years
New York University	Master of Professional Science	2009–2011
University of Pennsylvania	Bachelor of Science in Economics, Joseph Wharton Scholar	1997–2004

Continuing Education	Course	Year
New York University	ITP Camp	2022
University of Pennsylvania	Quantitative Methods	2008
Moore College	Color Theory	2006

Personal Work

http://secretatomics.com

Authoring daily in: Swift, Unreal Blueprints

Authoring occasionally in: Javascript, Objective-C, C++

	SDK and Vendor Experience
Storage	GraphQL, Parse API, Firebase, Core Data, Keychain, UserDefaults, Filemaker, Access
Networking	Node.js, NSURLSession, AFNetworking, Alamofire, WebKit,Reachability, MultipeerConnectivity, gRPC
Analytics	mParticle, Parse, Fabric, Kissmetrics, Facebook, Google Analytics, Optimizely, Bugsnag, BeautifulSoup, NLTK, SPSS, ArcGIS, Custom
Animation	CoreAnimation, CoreGraphics, CoreImage, SceneKit, SpriteKit, GamePlayKit, CoreMotion, Processing, Unreal Engine, Cinder, OpenFrameworks, OpenGL, GLSL
Media	Notification Center, Kahuna, Photos, SDWebImage, Google Maps, Apple Maps, GoNative, QT
Authentication	Parse, Facebook, OAuth, Digits, Firebase
Purchasing	StoreKit, CardIO, RMStore
Testing	XCTest, OCMock
Toolchain	XCode, Visual Studio, VS Code, Cocoapods, Carthage, Git, Node Package Manager, CMake, Bitrise, Jenkins,
Design	Illustrator, Photoshop, InDesign, After Effects, Premier Pro, Final Cut Pro, SketchUp, Blender
Embedded	Arduino, MQTT, TCP/IP, UDP, Serial, I2C, SPI,CoreBluetooth, iBeacon

Google   http://maps.google.com

Senior UX Engineer   April 2021 - March 2023

UX Engineer   September 2018 - March 2021

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Google Maps serves over a billion users for place discovery and navigation.

I was the lead UXE for iOS development on my team in Geo providing design solutions
and production-backed proofs of concept built on iOS for review by cross-functional
collaborators, mission directors, and executive sponsors across four teams.  I
collaborated with UXD partners to architect, author, maintain, and distribute a monolithic
prototype, demonstrating ~35 separate end to end user journeys, framed for 1-2 year
timelines following PM and Eng OKRs and 3-5 year projections of UX and PM bets.  I managed
the scope and schedule for delivering prototypes to partners by spending no more than 2
weeks on a single feature and finishing most incremental design asks within 1-2 days.  I
worked with L6-L7 designers and project managers to conceptualize and implement user
journeys that will attract executive-level sponsorship. Notable tasks included:
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- Documenting and pitching new concepts to executives to acquire sponsorship for short term design directions and long term R&D investigations
- Blending Google Maps, StreetView, Live View, Immersive View, Earth Engine, ARKit, AVFoundation, MLKit, Firebase and other supporting frameworks into demonstrations of new capabilities in Maps across device ecosystems
- Investigating mixed media experiences including combinations of Unreal, ARKit, SceneKit, UIKit and SpriteKit with large language model (LaMDA) and Google Assistant generated conversation
- Demonstrating alternative choices for the design consensus around the IA of Google Maps entry points
- Embedding on a team to do a a multi-quarter deep dive into the place sheet framework
- Connecting iOS prototypes to a development cluster streaming Unreal Engine driven content and designing Unreal and Earth Engine camera paths and controller interactions to evaluate design proposals
- Connecting iOS apps to serial interfaces such as embedded IMUs and using the tracking sensors of AirPods to drive gestural interfaces
- Performing tests of photogrammetry, facial tracking, and skeleton tracking using iPhone and iPad depth cameras
- Developing an Apple Watch proof of concept and designing iMessage extensions
- Translating the Google Vector Tile API into a SceneKit demo that shows searching in 3D
- Authoring and documenting a personalization engine built on MLKit that relies on PII signals validated by internal users
- Developing and distributing to dogfood from google3 using production CI servers
- Configuring authorization servers and authoring Javascript endpoints and Swift model objects to connect iOS prototypes to production and development services and storage using URLSession and gRPC

Homer Learning   https://www.learnwithhomer.com

Senior Engineer   March 2017 - June 2018

Homer Learning is a cross-platform application designed to teach elementary reading to toddlers between the ages of 2 and 8. Homer uses stories, songs, and mini games to gradually present letters and words. Simple personalization is used to engage a child's interest. Homer retains more than 250,000 subscription-based monthly active parent and teacher users.

At Homer, a team of as large as seven iOS engineers collaborated on the iPhone and iPad client for Homer Learning, four engineers provided backend engineering, and three engineers produced the content pipeline. Covering code with unit tests and integration tests, using XCTest, OCMock, and mocha.js was mandatory. Development shifted over the course of the year from a trunk-based process to a peer reviewed, git-flow process driven by occasional pair-programming, daily remote, agile standups, and project retrospectives recorded in JIRA and Google Docs. Deliverables included:

- Contributed code and white papers to the iOS, analytics, backend, and content production pipeline teams
- Evaluating content production pipeline alternatives for producing cross-platform character animation
- Reviewing GraphQL implementation and proposing a refactoring strategy to support the long-term roadmap
- Adding Parse API endpoints covered by mocha.js tests
- Design and implementation of a dynamic, CMS-driven contextual onboarding system
- Design and implementation of behavior tracking and non-fatal error reporting to multiple service providers
- Refactoring the main navigation controller to provide smooth transition blends for UIKit and Cocos2D
- Refactoring audio asset handling into a sequenced, multi-track audio manager
- Collaborating with a senior web engineer to implement OAuth for partner subscribers
- Configuring continuous integration for XCode bots and parallelized tests for Bitrise
- Converting the XCode project and unit tests to support Swift frameworks in Cocoapods
- Developing new mini game templates and view controllers
- Building a proof of concept for a state machine that improves orientation and handles deep links to any page

Evil Apples   http://evilapples.com

Senior iOS Engineer   April 2016 - December 2016

Evil Apples is an iPad and iPhone card game based on the premise of Cards Against Humanity. Five players compete in a seven or more rounds. In each round, one player acts as a judge and the remaining players select cards to complete a sentence. Evil Apples supports several discovery mechanisms including friends-only and stranger mode. It uses in-app currency to limit the rate of play and expand the content a player can use. It serves more than 300,000 monthly active users and retained a 99.7% crash free rate over the course of 2016.

The Evil Apples development team consists of the co-founder and project manager who performed back-end development, one Android engineer, and one contracted iOS engineer. Responsibilities included:

• Executing sprints around maintenance issues with performance, stability, and security
• Adjusting the distribution of in-app currency and pop up advertisements
• Enhancing the chat room content, main menu, backgrounds, and deck collection views
• Building auto-layout views for new device sizes
• Refactoring the in-app purchase store layout and model
• Delivering a proof of concept refactor for the main navigation controller to a tab-based system

Robo 3D   https://robo3d.com

Senior Engineer   October 2016 - December 2016

Robo 3D is a 3D printing company funded as a Kickstarter project. The 3D printing hardware requires an open source client written in QT to send print jobs to the printer. The QT client must be installed through a package manager, and the package manager must be created for cross-platform installations. Robo3D needed an engineer to create the package manager for MacOS.

Responsibilities included customizing the Cura open-source project for Robo3D's branding and hardware in QT and creating a build script that output a signed package manager and installer for Mac OS using CMake.

Girl Effect   https://www.girleffect.org

Senior Engineer   October 2016 - December 2016

Girl Effect needed an iPad application designed to solicit fundraising from a small group of wealthy donors. The app navigated through layered menus to reveal the story of the affected communities and the organization's goals. A celebrity gave a presentation at her home to the donors using the app and an interactive table, developed by Line Break Studio, running on the same content backend.

Pentagram (https://www.pentagram.com) secured the Girl Effect project and subcontracted the development to Line Break Studio (http://www.linebreak.studio). Line Break needed an additional engineer to meet the short timeline requirements. Line Break managed the contract relationship and delegated engineering responsibilities such as populating content in RxSwift containers and refactoring the video player.

MTV News   http://www.mtv.com/news

Senior iOS Engineer   January 2016 - May 2016

MTV News was an iPhone and iPad application designed to wrap the content of
www.mtv.com/news with a native navigation container and a single social feature. The
client intercepted the inbound web content and modified the source code in transit to
support a native navigation experience using the GoNative SDK. The user was encouraged
to take screenshots of the content and share it with friends through many social network
APIs. The client hired Crush & Lovely (http://crushlovely.com) to implement the design and
Crush needed a subcontractor to develop the iOS client. The MTV team knew at the outset
that their chosen solution was a temporary fix to a larger branding challenge, and the MTV
News app was removed from the App Store in late 2017.

The development of MTV News was conducted by an internal project manager, external project
manager, iOS developer, Android developer, and a backend web client team. The team
followed an agile development process. Responsibilities included:
- Customizing the GoNative wrapper for MTV's web content
- Adding an interface to screenshot the content; adding the social network sharing APIs
  for iMessage Email, Instagram, Facebook, Twitter, Pinterest, and WhatsApp
- Delivering pixel-perfect animation sequences for UI component transitions

The Liquor Cabinet   http://www.theliquorcabinet.com

Senior Engineer   September 2015 - February 2016

The Liquor Cabinet is an iPhone application that presents mixology variations of classic
alcoholic drink recipes. Each recipe includes ingredients, instructions, tools and
variations. The client needed a single engineer to handle backend database deployment and
native iOS development for the prototype and first version release.

The development of The Liquor Cabinet included the product owner/client, a designer,
and a single engineer with a contracted project manager. The budget and timeline were
limited by the client's resources, and the client was focused on pixel perfect design.
Responsibilities included:

- Creating a Parse instance
- Authoring an administrative tool to upload and join the database tables
- Implementing authentication with Parse; implementing card layout designs and seamless
  transitions
- Implementing a filtering system based on ingredients, skills, and flavors
- Implementing a search function

Yarn   http://samsungnext.com

Senior Engineer   December 2014 - August 2015

Yarn was a cross platform photos service developed at the Samsung Accelerator in New York City. The product was designed to transfer the photos from storage such as iCloud, Dropbox, etc. into a proprietary analytical pipeline. The user was encouraged to tag photos with hashtags about people, places, and interests, and the Yarn application server would automatically, periodically return a collection of photos grouped together by topic. The goal of the work at the Accelerator was to integrate the service as a default in Samsung Nexus devices, and the first release was designed and built for iOS, Android, and web clients. The Yarn iOS application was released into production, with several subsequent maintenance releases, and roughly 5,000 users were accepted into the beta. The Accelerator did not choose to acquire the IP, and the client was eventually removed from the App Store. Apple's native Photos client released an identical service shortly before Yarn was disbanded.

The development of Yarn was managed by a product owner, Chief Technology Officer, machine learning and back-end developer, front-end web developer, native iOS developer, native Android developer, remote iOS contractors, and a succession of UX designers and product consultants. The team followed an agile development process. The Accelerator required the product owner to present progress monthly to the executive team in order to continue funding for development. The remote iOS contractors were focused on delivering content for the presentation's meeting while the in- house developer was focused on long term production code. Responsibilities included:

- Design and implementation of a network client to fetch photos from first-party and third-party repositories within foreground and background processes
- Design and implementation of a Model View, View Model design pattern
- Design and implementation of a parent/child CoreData model for fetching and storing assets and metadata
- Design and implementation of a gallery layout algorithm
- Implementation of a card-based memory feed, gallery presentation view, gallery editing view, collage editing view, photo tagging view, and other custom interfaces in auto-layout

Beautified

Senior iOS Engineer   May 2014 - November 2014

Beautified was an on-demand client for making beauty service appointments in the New York and Los Angeles markets. The app was designed to extend the lifestyle brand of a well-known millennial celebrity. Women used Beautified to locate recommended shops for haircuts, blowouts, nails, massages, etc. and book a last-minute appointment on their phone. The vendors were suggested based on location and time through a feed. Beautified gained traction through marketing in publications such as Vanity Fair, Teen Vogue and Elle, but the founders came to a disagreement about management that resulted in mutual lawsuits and a shuttering of the business.

The development of Beautified included three product owners, two back-end Ruby developers, a native iOS developer, and a contracted product design consultancy. The native iOS developer and back-end developers worked closely to develop API integrations. Responsibilities included:

* Fully rewriting the client interface to implement the design created by the product consultant
* Writing collection view content in auto-layout
* Integrating the Kahuna push notification marketing service
* Integrating custom behavior tracking analytics events with mParticle
* Integrating a credit card transaction SDKs
* Producing a data explorer of the purchase funnel events to evaluate the user flow design
* Presenting an analysis of the purchase flow visualization to the co-founders

Weather Whiskers and Smiley Central   http://www.weatherwhiskers.com

Senior iOS Engineer   December 2013 - May 2014

Weather Whiskers and Smiley Central were designed by IAC's Mindspark group, aka Ask Applications, to gather behavior tracking data on iOS usage. Smiley Central was a sticker app that sent custom Smileys through text messages and other channels. Weather Whiskers was a weather app that delivered the forecast with large photos of cats. Both clients implemented a custom behavior tracking analytics service used by Mindspark to track long term value against cost per acquisition. Mindspark needed an emergency fix in the in-app purchasing system before Christmas, and the work developed into a full-time role that ended in recruitment into a higher paying start-up environment at Beautified.

The development of Mindspark's app relied on a product owner, project manager, two back-end engineers, a single native iOS engineer, and two designers. The team participated in daily standups and followed a strict agile development process documented in Atlassian's JIRA and Confluence. Responsibilities included:

* Refactoring the iPhone client into a universal client
* Writing a wrapper for the custom behavior tracking system
* Improving the speed and transition of scrolling through views with large assets
* Bug fixing in-app purchasing crashes in legacy code

mcgarrybowen LABS   http://mcgarrybowen.com

Senior Interface Engineer   December 2012 - December 2013

mcgarrybowen LABS was the creative technology research group inside of the ad agency's office in New York. A group of four engineers worked under a director and creative director to develop pitches of new technology possibilities for internal teams in the agency. The internal teams evaluated the ideas and presented interactive experiences to external clients such as JPMorgan Chase, Verizon, and Maserati as part of agency-wide efforts to win business. The LABS was disbanded during a layoff that occurred after JP Morgan moved its agency of record relationship away from mcgarrybowen.

mcgarrybowen asked for thought leadership and prototypes that could be included in pitches to external clients. Multi- talented engineers collaborated to produce desktop and mobile proofs of concept covering indoor location tracking, depth mapping, responsive environments, drone technology, iBeacons, MultipeerConnectivity, and web-connected robotics. During that time, responsibilities included:

- Design and implementation of event-based social media data visualization and manipulation in Unity
- iOS prototypes demonstrating mesh networking and indoor location tracking using CoreBluetooth

ESI Design   http://esidesign.com

Senior Interaction Designer   July 2012 - October 2012

ESI Design had a UX evaluation project for Christie's that was well past deadline and had lost its UX designer. The client expected a full review of the website to culminate in a report detailing the weaknesses of the existing design with recommendations for a redesign. The client relationship had been mismanaged by the ESI team and needed to be salvaged. The report was delivered on a renegotiated timeline, and an executive team came to the ESI Design offices to review it in a workshop.

The team at ESI Design consisted of the UX Director, a Senior Interaction Design, and a Writer. Responsibilities included:

- Authoring a report that summarized existing user flows and prioritized the goals for a redesign
- Preparation of content audit spreadsheets, design documentation, and information architecture charts
- Collaboration with the UX Director to prepare and lead an executive workshop
- Recording work reviews and meeting notes and responding to client communications
- User experience brainstorming and concept development

Columbia University Medical Center   http://www.cumc.columbia.edu

Data Analyst   June 2011 - July 2012

Columbia University Medical Center operated a research lab studying the conflicts of interest between doctors and pharmaceutical companies. In order to demonstrate conflict, the center documented the financial relationships inherent in pharmaceutical manufacturer funding grants for doctors to attend continuing medical education courses at conferences covering their prescribed drugs. The center needed an information architect to design and implement the discovery, cleaning, storage, categorization, and visualization of publicly available grant information. A derivative article, published in 2013, is located at https://jamanetwork.com/journals/jama/fullarticle/1790870

An information architect, three research associates, and two principle academic lead investigators prepared and summarized the data for the proposed research. Responsibilities included:

- Locating publicly available grant information on pharmaceutical companies' websites
- Writing Python utilities to scrape websites and PDFs using BeautifulSoup
- Cleaning the raw data into spreadsheets with Python and line-by-line review
- Collaborating with the principal investigators to create organizational categories
- Overseeing three research associates' work as they categorized the data into organizational type
- Analyzing grant information and producing reports for the lead investigators and board of directors
- Creating visualizations of the findings

New York University   http://isaw.nyu.edu

Systems Administrator   October 2009 - January 2011

The work study program at New York University needed a Systems Administrator to maintain the Mac OS X server environment and provide technical support for the researchers at the Institute for the Study of the Ancient World, a research institute and museum in the Upper East Side.

Responsibilities included:

- Troubleshooting Mac and PC environment desktop and laptop issues
- Maintaining the server environment for internal document storage and communication
- Providing customer service to visiting scholars and donors
- Communicating with the director, managers, and students about technical issues and upgrades

Philadelphia Workforce Investment Board   http://philaworks.org

Data Analyst   October 2007 - August 2009

The Philadelphia Workforce Investment Board, now Philadelphia Works, was a pseudo-governmental organization responsible for providing research and presentations to state officials, the city's mayor, school district officials, and community managers that guided state and local policy covering workforce development. The Investment Board employed a data analyst to support the Director of Research as she compiled economic trend analysis from labor reports, census data, GIS data, and other measurements to author summaries and recommendations to the board of directors and elected leaders.

Responsibilities included:

- Analyzing and visualizing governmental employment and education statistics
- Authoring industry focused forecasts of the expected impact of the 2008 recession
- Developing an interactive data explorer application in Processing for comparing vocational education programs to job opportunity predictions by region
- Authoring GIS-based map overlays showing labor statistics by census geographies
- Authoring summary reports for public officials
- Evaluating American Recovery and Reinvestment Act grant applications

Apple Retail   http://apple.com/retail

Mac Genius   April 2006 - September 2007

In 2006, a Mac Genius was encouraged by store management to spend as much time as necessary to understand a customer's problem and help set their expectations about a repair, if possible, and a replacement, if not. Hardware repairs were typically performed in an on-site lab, rather than being sent to a facility, and an emphasis was placed on customer satisfaction and quality of service. Mac Genius employees filled more than one role in the store, often running educational workshops on Apple's creative technology or helping a customer make the decision of which laptop to buy. The full staff was responsible for tracking inventory, loss prevention, and updating the retail space for roll outs.

Responsibilities included:

- Evaluating hardware failure and user experience issues
- Repairing desktop, laptop, and mobile devices
- Leading educational seminars
- Delivering best-in-class retail customer service
- Collecting repair performance data and authoring an analysis of opportunities for improvement
- Developing an in-house tracking system for repairs and parts

Wharton Small Business Development Center   http://whartonsbdc.wharton.upenn.edu

Project Coordinator   August 2005 - March 2006

The Wharton Small Business Development Center "leverages the students, faculty and staff of the Wharton School, as well as partnerships with experienced professionals and leading outside organizations. The WSBDC serves more than 600 businesses with individualized consulting. These programs serve the dual function of helping entrepreneurs start and grow their companies, while offering more than 300 students each year the opportunity to apply their academic coursework across such fields as finance, management, international and global studies, health care, life sciences and marketing to real-world entrepreneurial practice."

Responsibilities included:

- Designing and managing a research program to deliver 1000 consulting hours to 75 clients in the form of competitive analysis and business plan evaluations
- Screening, interviewing, managing, and evaluating 15 research consultants
- Building knowledge assets databases
- Collecting, processing, and auditing hiring documentation, payroll, contractor and vendor invoices
- Delivering the course logistics and contracts for 15 instructors
- Providing sponsorship and data analysis to the Philadelphia 100 organization
- Supporting the Director in developing conferences, administration, and grant reporting
- Evaluating American Recovery and Reinvestment Act grant applications

Tom Edgcumbe Interiors

Finished Construction   May 2003 - August 2005

Tom Edgcumbe Interiors specializes in bathroom and kitchen remodeling using custom designs or budget conscious pre-fabricated materials. A typical bathroom remodel involves tearing out the old cabinets, plumbing, and drywall and installing new pipes, valves, fixtures, cabinets, floors, bath tile, and accessories in a person's home over three days to two weeks.

Responsibilities included:

- Customizing manufactured remodeling construction materials for unique applications
- Achieving a finished construction result
- Soldering pipes and replacing valves
- Performing wall repair, drywall, and tile
- Installing accessories such as lighting, grab bars, towel bars, and switches
- Ensuring customer satisfaction with on-site reviews and service calls

Smiling Screens

UI Designer   May 2003 - July 2004

Smiling Screens was a venture backed startup, incubated at the University of Pennsylvania,
focused on the design of a simple, intuitive interface that the elderly could use to
perform common tasks on a desktop computer.

Smiling Screens employed three cofounders, a back-end web engineer, a front-end web
engineer, a UI Designer, and an Office Manager. Responsibilities included:

• Managing web front-end project design and development
• Designing a desktop client front-end user experience
• Designing electronic and printed sales tools, logos, advertisements, and related
  commercial art

University of Pennsylvania   https://www.wharton.upenn.edu

Fiscal Coordinator   April 2003 - August 2003

Wharton Undergraduate Advising Summer LEAD Program was a summer program for Wharton
undergraduate students to practice management skills.

Responsibilities included:

• Rebuilding budget tracking systems in Excel
• Automating expense requests and recognitions in Access
• Coordinating the general ledger for LEAD Program
• Training the Wharton Advising Office Business Administrator in database management

Island Partners Hawai'i   http://islandpartnershawaii.com

Project Coordinator   November 2002 - March 2003

Island Partners Hawai'i coordinates travel logistics for conference events held in the
Hawai'ian islands.

Responsibilities included:

• Reconciling purchase order invoices with internal budgets
• Managing group reservation logistics
• Redesigning invoice and budget templates
• Refreshing the product matrix with service provider marketing and contact information

University of Pennsylvania   https://www.wharton.upenn.edu

IT Coordinator   January 2001 - August 2001

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The Wharton Advising office asked for materials to offer a Leadership of the Business World
computer tools course to selected high school students.

Responsibilities included:

•   Creating a rubric to teach business software skills
•   Designing content and layout for presentation materials
•   Writing instructor documentation for program leaders
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My DTV

Executive Assistant   August 2000 - December 2000

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MyDTV was a venture backed startup in Burlingame, CA working on leveraging metadata
streams attached to interactive TV interfaces.

Responsibilities included:

•   Assembling a digital television metadata server prototype
•   Managing office and laboratory equipment procurement
•   Maintaining financial records
•   Collaborating on client interface design and product marketing strategy
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Apple   http://www.apple.com

Accounting Intern   May 2000 - August 2000

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Apple offers a summer internship program for undergraduate students..

Responsibilities included:

•   Authoring a software manual and training guide for the Cost Scrub Tool
•   Documenting and presenting product development cost summaries
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University of Pennsylvania   http://whartonsbdc.wharton.upenn.edu

IT Coordinator   January 1998 - May 2000

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The Wharton Undergraduate Advising Office provides administrative services and guidance to
undergraduates.

Responsibilities included:

•   Gathering and analyzing stakeholder feedback data
•   Designing analytics reports
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NOAA   http://www.atdd.noaa.gov

Webmaster   May 1996 - July 1997

The Atmospheric Turbulence and Diffusion Division is a National Oceanographic and
Atmospheric Administration Laboratory in Oak Ridge, TN. The lab recruited high school
students to work various part-time jobs for research scientists.

Responsibilities included design and development of the center's website.

NOAA   http://www.atdd.noaa.gov

Webmaster   May 1996 - July 1997