# Tamesh Sivaguru

## Details:

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## Summary:

I am a .NET Developer with a background in Physics, and have a keen curiosity regarding Financial Mathematics and how the physics of such paradigms can be modelled & solved using code.

I am a dedicated and hardworking individual with a well-rounded personality and will go the extra mile to achieve results, as well as openly voicing my judgement & opinion on situations where I feel I can provide a useful input.

Specialties: C#, Mathematical Modelling, Financial Derivatives, SQL, Functional Programming (Fortran/F#/Python).

## Experience:

**Bank of Tokyo Mitsubishi UFJ (BTMU/MUFG) (January 2016 – June 2016) – Software Consultant:**

As a consultant I engaged with my client to provide bespoke software in the form of a web application used internationally to manage structured finance based deals.

The application at its core allows the bank to manage deals it has made; to give a few examples it allowed monitoring of the fee's generated, income forecasts and tranches as well the instruments that make up these tranches (CDO's, Swaps, Bonds, Loans, to give a few key examples).

The core technologies used were C# (.NET4.5), ASP.NET MVC 4, AngularJS, JavaScript, NHibernate and NUnit. I provided development on a full stack basis i.e. User Interface through to backend database development as well as domain specific business logic.

Development was done as part of an agile team in a Scrum process, with sprints lasting two weeks and a regular show & tell with the business at the end of each sprint. The team would also sit and meet with the business at least twice a week to clarify any user stories or to discuss future developments.

**Pershing, A BNY Mellon Company (June 2015 – October 2015) – Lead Developer – Senior Associate:**

At Pershing. I came into the Trading & Settlements team as the most senior developer regarding the dotNET framework. Initially, whilst being trained in business concepts around trading systems, I refactored a large behaviour driven testing framework based on the SpecFlow framework. To aid in this effort I introduced Inversion of Control / Dependency Injection concepts; by diving into the companies open-source software approval process and seeking approval for StructureMap and CommonServiceLocator. These tools allowed me to refactor the solution into isolated components and also reduce the amount of code in the solution by around 50%.

I worked on a file monitoring application which moves and copies trade information from external clients. This is a multi-threaded application and after an environment change (service in a new location), network latency was causing threads to ever increase without being released causing eventual termination of the program. To remedy this I dug into the solution which was in VB.NET (which we converted to C# with an automated tool and verified by running the present unit tests).  I performed a number of tests in various locations and concluded that the threading model used was not appropriate and so altered the thread creation and

maintenance logic from using the ThreadPool to manual threads that are managed with custom timers. This increased the IO on the server slightly but was extremely resilient to latency issues as a result; which we stress tested by programmatically dumping thousands of files.

**Key Technologies & Concepts:** .NET 4.5.1, C#, SQL 2008R2, SpecFlow, VB.NET, Multi-Threading, Garbage Collection, StructureMap, CommonServiceLocator, NUnit, TFS 2013, SonarQube, performance monitoring & tuning (dotTrace).

### Lloyds Banking Group (March 2014 – May 2015) – Senior Developer - Manager:

I oversaw the development of a prototype system which involved designing and fleshing out business requirements for an eventual live system alongside new modernised architecture for the team.

During the early stages of the prototypes conception I performed business analysis tasks to identify the scope the requirements, from the use case documents provided.
Once the analysis had been completed and the timelines established, I went on to architect the system. ASP.NET MVC in C# was used as the backend framework alongside Entity Framework 6 (ORM). The entire application was built using Inversion of Control principles (using Microsoft's Unity container to achieve this) so that we could easily test and build upon the code. The front-end of the system used HTML, CSS, JavaScript (in the form of JQuery, Kendo UI for complex Grids containing hierarchical data and multiple filters, TypeScript was used where OO JavaScript code which became required when writing client side calculations).

The database was initially built by Entity Framework using a code first approach, however as the databases complexity grew we switched to database first and reverse-engineered the database in to SQL Project (which is an automated process). We removed Entity Framework at this point as with SQL Server 2005 it was not producing particularly efficient queries, we introduced T4 generated stored procedures instead and this provided the desired performance. As the solution was built using IoC throughout it was a relatively pain-less process to remove Entity Framework.

Testing was done in a BDD manner using NUnit to write integration & unit tests that probed the behaviour and core functionality of the system. I.e. BDD was useful for testing end-to-end user processes, where-as unit tests were useful to test finer grained logic like calculations based on formulas.

I was the lead developer on the project with two contactors working alongside me and a junior developer some of the time. I managed the development tasks and provided mentoring where we had differing skill-sets.

This system was built as a showcase to replace a number of disparate systems throughout the bank which would help various departments work more efficiently and more uniformly.

**Key Technologies & Concepts:** .NET 4.0, ASP.NET MVC 4, C#, Entity Framework 6, SQL 2005/2008R2/2012, SQL Server 2012 Project, T4, JQuery, Kendo UI, Unity (IoC), HTML5, CSS3, LESS, JavaScript, Typescript, NUnit, SpecFlow.

### East Sussex County Council (10/2012 – 01/2014) - Contract Consultant:

I worked on an existing solution to implement a number of new features as well as to improve the functionality and maintainability of the existing feature set. The system does not use a uniform set of technologies between applications and so an array of technologies/methodologies have been learnt as required during implementation.

The core of the application cleansed various data sets i.e. address information and attempted to match this information to other types of data which allowed the council to keep track of various social services cases. The data-matching was done using fuzzy-logic some in C# and some in a black-box third party solution, which we fed information in and out of using WCF over a secure HTTPS connection. The application also provided advanced search functionality using Apache Lucene for .NET.

**Key Technologies & Concepts:** C#, ASP.NET MVC (custom/2.0/3.0/4.0/5.0) / NHibernate/ SQL/ Castle Windsor, F#, JavaScript, JQuery, Google Closure, HTML5, CSS2/3.

**FDM Group (5/2012 – 01/2014) – IT Consultant:**

I trained in .NET with FDM Group and was placed with East Sussex County Council.

**Royal Surrey County Hospital (08/2009 – 08/2010) – Medical Physicist:**

My main responsibilities included but were not limited to: Assisting in routine physics surveys of complex x-ray equipment at a number of client sites around the country, the analysis of patient radiation dose data from all of our clients to look for opportunities to optimise current protocols and to ensure legislative radiation dosages were met, maintenance of MS Access databases, creation of MS Excel spreadsheets to analyse large quantities of data and to filter out irrelevant information, creation of MATLAB codes to analyse various digital images.

## Education:

**Columbia University in the City of New York (edX Verified Certificate; Dec 2015 - Jan 2016; 72%):**
ColumbiaX: DS101X Statistical Thinking for Data Science and Analytics

**Massachusetts Institute of Technology (edX Verified Certificate; Jan – Mar 2015; 72%):**
6.00.1x, Introduction to Computer Science and Programming Using Python

**Massachusetts Institute of Technology (edX Verified Certificate; Mar – May 2015; 78%):**
6.00.2x: Introduction to Computational Thinking and Data Science

**University of California, Berkeley (edX Verified Certificate; Feb – May 2015; 61%):**
BerkeleyX: CS188.1x Artificial Intelligence

**University of Surrey (2007 – 2011):**
BSc (Hons) Physics with Nuclear Astrophysics

**Queensbury Upper School (2001 – 2007):**
A Levels: Physics, Mathematics, Biology, Chemistry

## Honours:

World Challenge 2006 - Thailand Young Persons Enterprise Award 2005 - Queensbury
Upper School Robocup Junior National Champions 2004 & 05

## Interests:

Programming, Fitness, Derivatives, Investment analysis, Defence, Intelligence, Science/Physics, Global Affairs & Armed Forces.

## Publications:

Personal GitHub Repository (https://github.com/tams89 )

- Project Euler solutions in F# and C#.
- An Algorithmic Trading prototype system with the majority of the code (pricing, execution, back-testing) done in F# (with Parallel Processing) and a SQL Server database project for storing tick data and application log information, as well as unit tests in NUnit (C#).
- An AngularJS example App based in ASP.NET MVC 5, where users can browse stocks add create their own basic portfolio.