

Tareque Hossain
Arlington, VA 22202

302-827-3783
tareque AT codexn DOT com
www.codexn.com

Philosophy

- Utilize open source software to promote re-usability of code and contributing back to the community
- Develop innovative products through researching and rapid prototyping
- Help build a healthy software development culture through dedication to the principles of the company, team and project

Summary

- Experienced in developing web based systems as well as core server applications. Familiar with requirement analysis, architecture design, testing & deployment techniques
- Proponent of MVC frameworks that allow creation of re-usable applications, e.g. django, Backbone
- Capable of thriving in agile/ iterative & collaborative development environment
- Skilled in Python, Django, Javascript, Backbone, C, PHP, SQL

Education

- B. Sc. in Computer Science & Engineering (2006) from Bangladesh University of Engineering & Technology. CGPA: 3.88
- M. Sc. in Computer Science (2011) from The George Washington University. CGPA: 4.00

Professional Experience

Senior Web Technologist, PBS Education
July 2008 – Present

Public Broadcasting Service
Arlington, VA

PBS LearningMedia (pbslearningmedia.org)

- Developed next-generation digital media platform for PreK-16 classrooms that delivers PBS content in various formats
- Worked on a solution that allows dynamic creation of white label media platform sites for PBS stations and partners
- Developed several core applications using a balanced mix of **django** on server side & **Backbone**, the Javascript MVC framework on browser side
- Participated in design and implementation of a system that nearly 100% **API** powered. API is powered by an enhanced version of django-piston. All public facing LearningMedia applications communicate with a central API server
- Researched and implemented API security layer using **2-legged-oauth**
- Participated in implementation of an API focused **content management system** that powers PBS LearningMedia

- Worked with data models with **MongoDB** backend, e.g. designed **analytics** models that reduce primary event table access using timespan buckets
- Implemented login system that utilizes PBS Universal User Authentication API

PBS Universal User Authentication (UUA) System (login.pbs.org)

- PBS UUA promotes a single login method/credential for all PBS sites. Based on OpenID
- Solely designed and developed API subsystem for PBS UUA that allows user & website manipulation via API
- Implemented API security layer using **2-legged-oauth**
- Added API based login support for PBS UUA that verifies user credential over oauth secured API and completes login process using OpenID. Wrote OpenID extension for API based login
- Extended OpenID standards to allow users to log out of PBS UUA from consumer site (not supported in existing OpenID standards) This addressed the security concerns over potential abuse of UUA authenticated and un-terminated browser sessions on public computers
- The API is now live and greatly extends the usability of UUA

Peer Connection v2 (pbs.org/peerconnection)

- Developed a set of **social networking** and collaboration tools for PreK - 12th grade teachers using **Django** and **Python**
- Actively participated in full development cycle from planning to testing
- Developed core **reusable applications** that have become part of official PBS Reusable Application repository
- Researched, integrated & fine-tuned **Solr** engine to search professional development resources and all dynamic data
- Optimized Django **ORM** calls across the site to improve response time by as much as 300%
- **Migrated** data from Peer Connection v1 to v2 by establishing mapping between data models

TeacherLine (pbs.org/teacherline)

- Participated in the development of an online professional development service that offers graduate level courses to PreK – 12th grade teachers, built using **Django & Python**
- Worked on numerous **bug fixes** and feature additions
- **Upgraded** TeacherLine from Django **0.96** to **1.1**
- Wrote test script in Python using **Selenium** and achieved **80% coverage**
- Supervised **integration** of ISTE Capstones Certification Tool into TeacherLine. Reviewed and rewrote most components of the module
- Developed a scheduling tool to manage facilitator assignments in TeacherLine
- Participated in **Agile** development process that yields bi-weekly deliverables consisting of deployable new/ improved functionality for TeacherLine
- Developed integration API in **PHP** to allow TeacherLine to communicate with Moodle, an open source Learning Management System (**LMS**). Switching to Moodle from previous provider Desire2Learn saved TeacherLine \$250K/year
- Wrote scripts to systematically archive over 300,000 learner submitted files and gradebooks from over 3500 instances of courses in Desire2Learn which does not provide an API for easy retrieval of such information

- Developed a Course Management System that automates the process of combining course content from GIT and course structure from development instances into Moodle ingestible package for deployment/re-deployment/updating of course instances
- Implemented **message queue** solution using Celery & RabbitMQ to provide for asynchronous request handling/management

Software Engineer

December 2007 – July 2008

BCI Incorporated

Greenbelt, MD

- Performed research on SS7 protocols e.g. **MTP Level 3** in order to add SS7 interfacing support to an existing SIGTRAN only Intelligent Network system. Researched on Service Creation Environment (**SCE**) & Service Management Environment (**SME**) for the above mentioned system
- Designed & developed web based User & Subscription Management System for BCI Long Distance & Calling Card Subscribers. **LAMP** based solution powered by custom PHP framework
- Developed the website of BCI Incorporated (www.connectbci.com) Designed interface template & all graphics, implemented information posting and management system in PHP
- Worked on existing components & implemented new features for Intelligent Network Service Control Point (**SCP**) Server. Involved coding in **C++**

Member, Research & Development Team

November 2006 – August 2007

Commlink Info Tech Ltd

Dhaka, Bangladesh

- Performed **research** on SIGTRAN family of protocols: M3UA, SCCP, TCAP, INAP & SCTP. Participated in **business requirement analysis** and **database schema design** for **Intelligent Network Service Control Point Server** project. Implemented all of the aforementioned protocols in Linux (except SCTP). Developed/ tested 80% of the core business logic in **C++** and **SQL**. Partly developed IN database (**PostgreSQL**)/ billing server **connectivity layers**
- Designed and developed interface for the website of Banglaphone Ltd. (www.banglaphone.net.bd) using **HTML, CSS & JavaScript** and worked to fit the interface on the existing PHP content management framework
- Conducted **Joint Requirements Development** (JRD) sessions with clients from East West University, Dhaka, Bangladesh for the project **EWU Website** (www.ewubd.edu). Participated in requirement analysis and authoring of **System Proposal** and Software Requirement Specifications (**SRS**). Participated in database schema design. Designed & developed interface for the project with **HTML, CSS & JavaScript**. Participated in enhancement and optimization of the PHP framework
- General programming practices included working with Open Source IDE e.g. Eclipse, version controlling using CVS, ensuring high re-usability of codes & detailed project documenting

Miscellaneous Projects

Django Config (github.com/tarequeh/django-config)

- An easy way to maintain multiple configurations for django
- Relies on the concept of having a shared configuration file and a per user/ server custom configuration file

Kernel Multiplexer (github.com/tarequeh/kmux)

- Researched, developed & submitted as thesis in partial fulfillment of the requirements for the M.Sc degree at GWU
- Advised by Prof. Gabriel Parmer, Assistant Professor, Dept. of Computer Science, GWU
- Kernel extension framework that intercepts the communication between user and kernel space (system calls) in order to extend, enhance or replace kernel interfaces
- Extremely low overhead through utilization of x86 interface for system call interception
- Allows creation of individual restriction profiles (sandboxes) for userland processes by multiplexing system calls from different processes among multiple kernels

Little eBay (github.com/tarequeh/little-ebay)

- Little eBay is an ultra light auction system
- Built using Django, Little eBay provides basic functionalities of an auction site

Open DES (github.com/tarequeh/DES)

- Open source implementation of DES encryption algorithm in C
- Provides command line interface for key generation, encryption and decryption
- Demonstrates the inner workings of DES in an easily understandable manner
- Supports Triple DES

Website of Department of Computer Science & Engineering, Bangladesh University of Engineering & Technology (www.buet.ac.bd/cse)

- Designed & implemented a complete **content management system** for the department of Computer Science & Engineering, Bangladesh University of Engineering & Technology
- Performed business **requirement analysis**, database schema design, coding & testing
- Designed front-end using **HTML, CSS & JavaScript**. Explored implementation feasibility of various open source PHP frameworks
- Implemented business logic and database interface using **PHP**. Deployed **MySQL** at the backend and **Apache** as the web server

Heuristic Solutions for the Multi-dimensional Multiple Choice Multi Knapsack Problem

- Developed algorithm for reaching optimal allocation of resources in a distributed environment
- Determined practical implementation feasibilities e.g. **QoS** maintenance for distributed VoD servers
- Implemented algorithm & developed **simulation** environment using **Java**
- **Research** performed in collaboration with Dr. Md. Mostofa Akbar, Associate Professor, Department of Computer Science & Engineering, BUET

Voice Activated Electronic Appliance Control System

- Developed using Visual C++, Microsoft **Speech SDK**
- Designed & implemented circuit for interfacing between appliances & computer via **RS-232**
- Supports up to 16 A/C Devices. **Voice control** for switching between multiple states of an appliance

Operating System for X86 Platform

- Developed from scratch using **Assembly**. Wrote the file system module
- DOS imitation. Features customized memory and **disk management**

Achievements & Activities

- Presented “Introduction to django-config” at **DjangoCon** 2009
- Mentioned in the official **Django author** list for bug fixes
- Involved in development of various open source projects, e.g. celery, ghettoq
- Received **2009 PBS Bravo Award** for contributions to software development scene at PBS
- Received **2009 PBS Performance Award** for contribution to PBS Education
- Received Deans List Award for all 4 session attended at BUET
- Official class position 10th out of 118 in the graduating class of 2006 in the Dept. of CSE, BUET
- Placed 4th in Higher Secondary Certificate exam (end of 12th grade) among approx. 0.3M students
- Placed 20th in Secondary School Certificate exam (end of 10th grade) among approx. 0.6M students
- Expert drummer. Performed on stage on numerous occasions

References

Available on request