Himanshu Taneja

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WORK

Software Engineer, MathWorks *May'19 – Present*

- Design and development of GUIs and APIs for MATLAB & Simulink.
- Integrated startup experience and layout restoration for MATLAB Online
- Designed and implemented Command History for MATLAB Online. Users can quickly go through and search for the commands they have executed in MATLAB command window.

Application Support Engineer, MathWorks *Jun'18 – Apr'19*

- Assist MATLAB customers specifically in the area of machine learning and data processing.

EDUCATION

Texas A&M University, College Station, Texas *Aug'16 – May'18*
M.E. in Electrical and Computer Engineering, GPA: 4.0

USICT, Guru Gobind Singh Indraprastha University, Delhi *Aug'12 – May'16*
B.Tech in Electronics and Communications Engineering, GPA: 74.85 / 100

SKILLS

Programming Languages: Java, C++, Python
Web Development: JavaScript, HTML, CSS
Tools and Databases: MATLAB, R, SQL, NoSQL, Git, Perforce

ACADEMIC PROJECTS

Personalized News Reader & Summarizer
A web application in Python using Flask framework. The application uses RSS feeds to aggregate news stories, and textrank algorithm to generate their short summaries. Users can sign-up for an account, customize news feed, save news stories, and organize them with tags.

- Designed & implemented an MVC based architecture for the web application; outlined a relational database model to manage application's data: used PostgreSQL as the database and SQLAlchemy as the ORM tool.
- Wrote two client-side libraries in JavaScript: Text-rank to summarize news articles, and Decision-tree based tokenizer to detect sentence boundaries.
- Built a responsive & asynchronous UI using jQuery and Bootstrap.

Molecular Geometry Optimizer
A Java application to optimize 3-dimensional structure of chemical molecules. The app implements a probabilistic optimization algorithm (Metropolis-Hasting) to find an optimal structure that minimizes the molecule's overall energy.

- Designed & implemented data structures to represent 3D structure of molecules; the custom data structures provide fast operations required for optimizing the molecular geometry
- The application is scalable and efficient; achieving constant-space & linear-time requirement per iteration (linear in number of atoms and bonds)

Classification of Microarray Data
The project involves using machine learning algorithms on Microarray to differentiate types of Leukemia Cancer. Microarray are "high-dimensional low-rank" matrices which provide a snapshot of cell/tissue status.

- Analyzed Generative & Discriminative class of ML algorithms, and identified the challenges in their use with "high-dimensional & low-sample" data.
- Explored different dimensionality reduction and feature extraction techniques; compared their complexity and performance on microarray data.

Sentiment Analysis of Restaurants Reviews
A java application to identify the polarity of restaurants reviews. The app is based on an unsupervised learning algorithm that works by calculating the semantic orientation of different phrases in a review.

- Designed Part-of-Speech based regular expressions to extract all "phrases" in a review
- Wrote a Java package to perform efficient proximity searches on large set of text documents