SHIVAM SINGH

Researcher & Developer ~ Software Engineering

Human Computer Interaction | Artificial Intelligence | Internet of Things

EDUCATION

- **Bachelor of Technology** **CPI: 8.6/10**
  Electronics & Communication Engineering
  Sam Higginbottom Institute of Agriculture Technology and Sciences, Allahabad, India
  June 2014

- **Higher Secondary Class (XIIth)**
  SOS Hermann Gmeiner School, Varanasi, Uttar Pradesh (India) **Percentage: 82%**
  2010

- **Senior Secondary Class (Xth)**
- Ma Durga Ji Vidyalaya, Jaunpur, Uttar Pradesh(India) **Percentage: 85%**
  2008

WORK – EXPERIENCE

- Analyst Nov 2016 – Present
  Accenture, Gurugram, India
  Responsibilities: Research (Internet of Things, Artificial Intelligence, Healthcare, Accessibility Solutions), Development (Open Innovation, Healthcare Solutions)
  Research Undertaken: Accessibility Solutions for Blind (Complete Solution development), Wearable Devices Integration, Multimodal interfaces for socially challenged people

- Product Development May 2015 – Oct 2016
  Accenture Digital, Accenture, Hyderabad, India
  Client: **Novartis Pharmaceuticals** (Healthcare Project)
  Projects Undertaken: Application design and development, Innovation
  Responsibilities: End to end development and delivery.

- Freelance User Experience Developer June 2014 – April 2015
  Projects Undertaken: Product design and development
  Responsibilities: End to end development and delivery.

PUBLICATIONS & SUBMISSIONS

- Shivam Singh, Anurag Bhandari and Nishith Pathak, "**Accessify An ML Powered Application to Automatically Provide Image Descriptions on Website**", Submitted at *15th International Cross-Disciplinary Conference on Web Accessibility*, Lyon, France April 2017
- Anurag Bhandari, Nishith Pathak and Shivam Singh, "**Designing a Multilingual Virtual Agent Capable of Interacting with Uneducated People**", **Presented** at GHCI 2017, *Grace Hopper Celebration India-Conference November 2017*, Bangalore International Exhibition Centre, November 2017

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- Anurag Bhandari, Nishith Pathak and Shivam Singh, "**Designing a Multilingual Virtual Agent Capable of Interacting with Uneducated People for Automated Data Collection**", **Accepted** at *IEEE Symposium Series on Computational Intelligence*, 2017, Honolulu, Hawaii, USA November 2017

RESEARCH – EXPERIENCE

Designing an ML powered Application for Visually Impaired Audience who use Screen Readers for accessing Online Content

Independent Research(October 2017-Present)

- An ML implementation of Image description is developed that can recognize images with good accuracy.
- Tensorflow Model is trained and tested on a Nvidia Tesla k series GPU.
- Image hashing is used and cached to serve the description at better speed.
- in memory database has been developed to further improve content rendering.
- An Nginx powered application server is tested for better web service.
- A node application is developed for web-scraping and further training of images to the ML model.
- A web service is developed on Node.js for providing RESTFul services.
- Different browser based plugins are developed to be integrated to serve description to the client with requested domain.

Integration of Wearables with Accessibility solution for Blind

Research Project: (February 2017 - Present).

- Couple of prototypes were designed for integration with mobile based accessibility application.
- Different gesture based sensors were tested on a Raspberry Pi Zero Test bed to be integrated with the device.
- Several eyewears were finalised to be integrated with the application wirelessly.Custom eyewear design is being developed to suit the low power consumption and highly efficient output parameters.
- The usage window was found between 15-20 minutes with wireless connection which was using 802.11 a band for connectivity.

Designing Accessibility Solution for Visually Impaired Audience

Research Project: (January 2017 - June 2017)

- A prototype with cross platform code base was developed and tested.
- The application is designed for keeping wearables and its significance in mind.
- The design of the prototype was finalised with keeping target users, i,e visually impaired, in design thinking process.
- The language used to develop the application was Typescript and a Machine Learning model was developed to process and label images. Efforts were to be made on, to integrate it wirelessly with eye-wares and glasses.
- The user acceptance testing was done with the help of NGOs for visually impaired people.

Designing a Multilingual Virtual Agent Capable of Interacting with Uneducated People for Automated Data Collection

Research Project: (November 2016-May 2017)

Ref Paper: Shivam Singh, Anurag Bhandari and Nishith Pathak and Sanjay Podder, *IEEE Symposium Series on Computational Intelligence* 2017

- A multilingual virtual agent was conceptualized, designed and prototyped.
- Face models were designed and simulated for specific talks and expressions.

- A cross platform code implementation was done and tested with deploying in various platforms and devices.
- The problem of language support was addressed by providing support for various regional and standard language.
- A much personalized and accurate result experience was recorded with no human element involved.
- A lightweight thin client model approach was adopted and optimized which provided high performance even in low connectivity.

Implementation of Intelligent Automation based Solutions for Complex Social Problems
Ref Paper: Sanjay, Janardan, Senthil, Neville, Indrani. Designing Intelligent Automation based Solutions for Complex Social Problems, *ICML 2016*
Design & Development Project: (November 2016- February 2017).

- Paper implementation suggested that the application must take into account the connectivity loss and network reach to be successfully implemented.
- An offline trained Machine Learning model with the formula concluded in original research was to be integrated with the developed application.
- The offline model provided the basic Vulnerability Index calculation of prone users and synced with online model when in reachable connectivity for completely accurate vulnerability.

RELEVANT–COURSE

- Human Computer Interaction
- Artificial Intelligence & Machine Learning
- Internet Of Things
- Operating Systems
- Object Oriented Software Development and Design
- Web Design and Development
- RESTful Web Services
- Design Thinking

ACCOLADES/PROFESSIONAL–HONOURS

- Awarded the prestigious Accenture Celebrates Excellence for Innovation in April 2017 for contributions in field of Research and Development.
- Awarded Accenture Labs Sunshine Award in March 2017, for exemplified research work.
- Awarded 3rd position(Team Award) for our submission of a friendly virtual assistant named "*LUNA-Language Understanding and Narrative Assistant*" for answering queries related to STEM, STEM challenge - Inspiring girls in field of STEM , Accenture Technology Labs, Bangalore, India, February 2017.
- People Developer Recognition by Accenture Japan.

WORKSHOPS/EVENTS

- Speaker- Augmented Reality, JSLovers community event in Gurgaon.
- Speaker-*Grace Hopper Celebration India (GHCI 2017)* conference at Bangalore International Exhibition Centre, November 2017

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- Inspiring girls in field of STEM , Accenture Technology Labs, Bangalore February 2017
- Coordinated- Quizzes & Competitions at Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, India..
- Member- Technical Society of Electronics, SHIATS, Allahabad, 2013-2014.

T E C H N I C A L – S K I L L S

- Programming Languages: JavaScript(Browser & Node), C#, Typescript, HTML5, C++, R, Python
- Server Side Frameworks: ASP .NET MVC, WebApi, NodeJS, RESTful Web Services
- Client Side Frameworks: Angular 4, ReactJS, Progressive Web Apps, jQuery, Bootstrap and CSS
- Mobile Frameworks: Ionic 3, Cordova
- Operating Systems: GNU Linux, macOS(Unix) and Windows
- Cloud Technologies: Microsoft Azure
- IDE: Visual Studio Code, Visual Studio 2017, Xamarin Studio
- Tools: Git, TFS, Reallusion Crazytalk, Node Package Manager, MATLAB
- IELTS Score: Band

C O N T A C T – I N F O R M A T I O N

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