Kishan Ved
Third Year Undergraduate
Discipline of Computer Science and Engineering
Indian Institute of Technology Gandhinagar
kishan.ved@iitgn.ac.in
+91 9619319866
LinkedIn | GitHub | Website | CV

ACADEMIC DETAILS

Degree	Specialization	Institute	Year	CPI/%
B.Tech.	*Computer Science and Engineering*	IIT Gandhinagar	2022-Present	9.71(/10)
Class XII	*Physics, Chemistry, Maths*	Prakash College, Mumbai	2020-2022	85
Class X		Thakur International School, Mumbai	2014-2020	97.8

EXPERIENCE

- **Google Summer of Code 2024, NumFOCUS** [May '24 - Present]
  (Mentor - Gagandeep Singh) | *Project Link* | *Blog Link*
  - Developing the C++ backend for a Python package: PyDataStructs. Adding support for tree data structures like Binary Search Trees, Self Balancing Binary Trees, Red Black Trees, AVL Trees etc. and their algorithms available in PyDataStructs.
  - Achieved a 5-8 times increase in execution speed, enhancing use in scientific computing and high-performance applications.
  - Used C++, Python and Python-C API. Learned to incorporate OOPS principles to write effective and reusable code and useful tools like Git and GitHub. Submitted a proposal for a talk at PyCon India 2024, based on my project: Proposal Link

OPEN SOURCE CONTRIBUTIONS (ON GITHUB)

- **LFortran (A Fortran Compiler)**: **10 merged PRs**: Implemented Fortran intrinsic functions in the C++ backend with comprehensive compile time and runtime integration tests. Addressed bugs related to string slicing and warnings emitted. Fixed handling of datatypes and conversion from complex to other datatypes.
- **LPython (An ahead-of-time Python Compiler)**: **5 merged PRs**: Implemented hypot() in the NumPy module. Developed string APIs like replace(), isnumeric() and isalnum() with all parameters supported. Modified the version control to ensure correctness of the CI checks on GitHub.

SELECTED PROJECTS

- **Text Generator based on next character prediction (Machine Learning Project)** [Mar '24]
  (Advisor - Professor Nipun Batra, IIT Gandhinagar) | *Project Link* | *Application link*
  - Developed a pipeline model for next character prediction based on the context of previous 'k' characters. The model used is a neural network with an embedding layer followed by 2 hidden layers. The model is able to capture the semantics of English language and generate meaningful words and phrases.
  - Deployed a Streamlit application which showcases the difference in results based on the choice of embedding and architecture of the neural network. Performed hyperparameter tuning to get the best results. Used Python and its libraries: PyTorch, sklearn, t-SNE and Matplotlib.
- **Facebook graph clustering based on density (Data Science Project)** [Jan '24]
  (Advisor - Professor Anirban Dasgupta, IIT Gandhinagar) | *Project Link*
  - Implemented a greedy algorithm to extract the densest subgraph from Facebook's graph (with pages being nodes and mutual links being edges). Peeled the 5 densest subgraphs (and hence, detected 5 closely knit communities in the graph) and analyzed their entropy.
  - Learned to employ data clustering techniques on large real-world datasets, involving logic and algorithmic optimization in terms of both time and space complexity. Done using Python and its relavant libraries like NumPy and Pandas.
- **Intelligent Game Engine (DSA Project in C and C++)** [Sept '23 - Nov '23]
  (Advisor - Professor Balagopal Komarath, IIT Gandhinagar) | *Project Link*
  - Developed a repository featuring intelligent game implementations, where the computer employs optimal strategies to make informed moves. Represented games in the form of graphs and employed graph traversals and game specific optimal greedy algorithms to make the computer play the best possible move.
  - Engineered a cube-solver capable of generating the most efficient solutions for any 2x2x2 Rubik's Cube, highlighting algorithmic optimization.
- **Open Source Project: Student Resume Generator Website** [Dec '23]
  (Used by Professional Development Council, IIT Gandhinagar) | *Project Link*
  - Deployed an innovative website enabling students to input their details and generate professional resumes in LaTeX, within seconds. Used by the entire student community at IITGN and also featured on the website of the Professional Development Council, IITGN. Made using HTML, CSS, JavaScript, Git and GitHub. Hosted by GitHub-Pages.

TECHNICAL SKILLS

- **Programming Languages:** C++, C, Python, Java, HTML, CSS, JavaScript (basic).
- **Tools:** Git, GitHub, PyTorch, Tensorflow, Numpy, Pandas, Linux (Ubuntu), MATLAB, Simulink, Autodesk Inventor, Verilog.

RELEVANT COURSES

- Machine Learning **(A+ or 11/10)**, Data Science **(A or 10/10)**, Data Centric Computing **(A or 10/10)**, DSA 2 **(A or 10/10)**, DSA 1 **(90.75/100, A- or 9/10)**, Probability, Statistics and Data Visualization **(A or 10/10)**, Numerical Methods **(A+ or 11/10)**.

ACADEMIC ACHIEVEMENTS AND AWARDS

- Designated as a **Reliance Foundation Undergraduate Scholar**, which is received by the top 2000 nationwide applicants.
- Selected in the **Dean's List for all semesters**, for exhibiting excellent academic performance.