Software Developer Intern (New York) – Summer 2025, DE Shaw

https://www.deshaw.com/careers/software-developer-intern-new-york-summer-2025-5137

Short Description
As a **Software Developer Intern at D. E. Shaw**, you'll be part of a team working on developing software solutions that support the company's financial and technology operations. You'll help design, build, and test software applications, often using programming languages like Python, Java, or C++. The internship gives you the chance to work with experienced developers, learn about different technologies, and contribute to real projects that solve complex problems. It's a great opportunity to gain hands-on experience, improve your coding skills, and learn how software development works in a fast-paced, high-impact environment.

Pros:

1. Hands-on experience with real-world projects.
2. Exposure to cutting-edge technologies.
3. Mentorship from experienced engineers.
4. Networking opportunities within a top firm.
5. High-impact projects with significant company contributions.
6. Enhanced problem-solving and coding skills.
7. Potential for full-time job offers.
8. Fast-paced, challenging work environment.
9. Competitive compensation and benefits.
10. Cross-functional collaboration opportunities.

Cons:

1. High expectations and pressure to perform.
2. Steep learning curve in a fast-paced environment.
3. Long working hours during peak project periods.
4. Handling complex, unfamiliar technologies.
5. Balancing multiple responsibilities or tasks.
6. Competitive atmosphere.
7. Repetitive tasks or debugging at times.
8. Limited time to explore broader aspects of software development.

Job Summary
As a Software Developer Intern at D. E. Shaw, you will help create and improve software by writing code, fixing issues, and working with a team. The job focuses on using your programming skills to build software that helps the company run smoothly.

Required Qualifications

- Pursuing a degree in Computer Science or related field
- Strong programming skills (e.g., Python, Java, C++, C#)
- Understanding of data structures and algorithms
- Strong problem-solving abilities
- Familiarity with software development practices (e.g., Git, testing, debugging)
- Experience with relevant technologies (e.g., SQL, databases, distributed systems)
- Good communication and teamwork skills
- Passion for learning new technologies and adapting

Strengths

- Proficient in multiple programming languages (Python, Java, JavaScript, TypeScript, HTML, CSS).
- Strong understanding of data structures and algorithms.
- Experience with both front-end and back-end development.
- Skilled in using frameworks like Angular and React.
- Familiarity with software development tools (Git, GitHub).
- Experience with version control and collaborative coding practices.
- Knowledge of software testing practices (unit testing, screenshot testing).
- Strong problem-solving and analytical skills.
- Ability to write and understand technical design documents.
- Experience with cloud-based systems and asynchronous data handling.

Gorakh Bahadur Khatri

gorakh.khatri@bison.howard.edu | Washington, DC | (571) 338 3514 | github.com/heysandy | linkedin.com/in/sandip8848/

EDUCATION

Howard University, Washington, DC — ***Expected Graduation: May 2026***

Bachelor of Science in Computer Science (HU Leadership Scholar) — ***GPA : 3.84/4.0***

Relevant Coursework : Computer Science III, Computer Organization, Software Engineering, Calculus II, Fundamentals of Algorithms, Cloud Computing, Operating Systems, Theory of Computation, Computer Network, Discrete Structures

TECHNICAL SKILLS

Programming Languages : Python, Java, JavaScript, C++, TypeScript, HTML, CSS

Frameworks, Libraries & Tools : Git/GitHub, Angular, React, Guice, Prompt Engineering, Matplotlib, NumPy, Pandas, Spacy, NLTK, Streamlit, NLP, RxJS, JUnit, SQLite, ResNet-50, Keras, OpenCV, Figma

WORK EXPERIENCE

NASA Aeronet Data Analyst, Howard University, *Beltsville, MD* — ***August 2023 – Present***

- Analyze **AERONET** data using **Python, Pandas**, & **NumPy**, leveraging **Time Series Analysis** & **Machine Learning models** to evaluate Aerosol Optical Depth and Water Vapor impacts on pollution.
- Utilize **Jupyter Notebooks, Matplotlib**, & **Plotly** for data visualization, providing insights on atmospheric interactions that support NASA's environmental research and climate models.
- Presented a research poster at **AERONET Science & Exchange 2024**, highlighting the findings on pollution trends.

Software Engineering STEP Intern, Google Inc., *Sunnyvale, CA* — ***May 2024 – August 2024***

- Designed & implemented a **Java RPC Action** & method using a **Large Language Model** to generate insights to troubleshoot slow database operations in Google's internal debugging tool.
- Augmented the trace formatter with additional metadata fields, enabling seamless storage and retrieval of **Traces, Logs, and Annotations**, improving the debugging process and reduced manual intervention.
- Developed over 5000 lines of backend code in **Java**, using **Apps Framework** and **Guice Dependency** injection, & **prompt-engineering LLM** outputs for optimized **RPC database** performance.

Teaching Assistant, Computer Science, Howard University, *Washington, DC* — ***August 2023 – December 2023***

- Supported over 250 students in CSCI-100, assisting the Google in Residence instructor during lectures and labs, and guiding students through **Python** programming concepts in weekly office hours.
- Created grading rubrics & provided feedback, organizing workshops to boost student collaboration & understanding.

Software Engineering STEP Intern, Google Inc., *New York, NY* — ***May 2023 – August 2023***

- Worked closely with a Google Cloud Storage UI team to build a subtask of an upcoming high priority GCS feature using **Angular components** & **TypeScript** to allow users to view & configure the cache settings.
- Executed the entire development process, including drafting technical design documents, leveraging **RxJS** for managing asynchronous data streams, & researching multiple design approaches.
- Wrote comprehensive **Unit and Screenshot Testing Cases**, fully complying with Google's code review process to uphold code integrity, minimize potential bugs, and ensure the use of industry-best coding practices.

PROJECTS

AI-Based Chess Game — ***September 2024***

- Built a full-stack AI-based chess game in **Java**, implementing the **Minimax algorithm** with **Alpha-Beta pruning** for AI logic, and created a responsive UI using **JavaFX** and **Java AWT** for smooth gameplay and visual effects.
- Integrated SQLite for game state persistence, used **JUnit** for testing move logic, managed dependencies with **Maven**, employed **Git/GitHub** for version control, and enhanced animations with the **JavaFX Animation API**.

ImageInsight: AI Captioning App — ***April 2024***

- Developed a Flask-based web app using a **ResNet-50 Convolutional Network** for feature extraction and **LSTM** for sequence generation, automatically generating captions for user-uploaded images.
- Utilized **Python, Keras, OpenCV**, and **Flask** to build and deploy the image captioning model, integrating **Deep Learning** with real-time web functionality.

Resume Analyzer — ***February 2024***

- Developed an AI Resume Analyzer with **Python, Streamlit, Spacy, & NLTK** for accurate resume parsing & analysis.
- Implemented **NLP** techniques using **Spacy** for **tokenization**, **POS tagging**, entity recognition, and **NLTK** for stemming and sentiment analysis to extract education, work experience, and skills data for personalized career guidance.

ACTIVITIES

Goldman Sachs Market Madness Scholar — ***January 2024 – April 2024***

- Selected from 500 applicants for a semester-long Goldman Sachs financial program; awarded $6,000 US Dollars.
- Led a capstone project on a **Nike Case Study**, recommending an acquisition strategy using financial projections.

X-Tech HBCU Student Competition- US Army — ***February 2024***

- Proposed an autonomous mine clearance system to the US Army & DOD, using **LIDAR**, **ground-penetrating radar**, & **thermal imaging** with drones for detection and robots for disarmament **(Python, ROS)** to neutralize landmines.
- Received a $3500 cash prize and presented the project at the 37th BEYA STEM Conference.

Gorakh Bahadur Khatri
Washington, DC, 20017
gorakh.khatri@bison.howard.edu
(571) 338-3514
September 19, 2024

Dear Hiring Manager,

I am excited to apply for the Software Engineering Internship at Google, which I found on Google's careers page. As a passionate computer science student, I am eager to work at Google because of its pioneering innovations and culture of pushing technological boundaries. Having already interned at Google, I know firsthand the incredible learning opportunities and collaborative work environment it offers. I am excited about the possibility of contributing to the company's ambitious projects once again.

Currently, I am pursuing a degree in Computer Science at Howard University, where I have built a solid foundation in programming, algorithms, and software engineering principles. My technical skills include Python, Java, JavaScript, and TypeScript, along with experience using frameworks like React and Angular. I have worked on various projects that honed these skills, including developing an AI-based chess game using Java and building an image captioning app using machine learning models. My educational background and personal projects have equipped me with the ability to tackle complex technical problems and contribute meaningfully to real-world applications.

During my previous internships at Google, I worked on projects that involved both front-end and back-end development. One notable experience was creating a Java RPC Action using a Large Language Model (Gemini) to optimize database performance and debugging processes. This hands-on experience taught me how to apply my technical skills in a high-impact environment and further fueled my desire to work at Google.

Google's focus on solving large-scale global problems and its leadership in AI and cloud computing align with my own career aspirations. I am particularly drawn to the company's innovative projects and its commitment to using technology to improve the lives of millions. I am confident that my skills, combined with my passion for technology, make me a strong fit for this internship. I am excited about the opportunity to continue growing and contributing to Google's success.

I am genuinely excited about the opportunity to join Google as a Software Engineering Intern and am eager to contribute my skills to your innovative projects. I would welcome the chance to further discuss my qualifications and how I can contribute to your team. Please feel free to contact me at (571) 338-3514 or via email at gorakh.khatri@bison.howard.edu to schedule an interview. Thank you for your time and consideration. I look forward to the opportunity to speak with you.

Sincerely,
Gorakh Bahadur Khatri

Here are 10 common interview questions and answers(for the role of Software Developer Intern role at DE Shaw for Summer 2025):

1. **Tell me about yourself.**
    - I am currently pursuing a Bachelor of Science in Computer Science at Howard University, where I maintain a GPA of 3.84. I've had the opportunity to intern at Google for two consecutive summers, working on projects involving Java backend development and large language models. In addition, I have experience in front-end development using Angular and TypeScript. My technical skill set includes Python, Java, and machine learning tools like NumPy and Pandas, making me eager to apply these skills in a fast-paced, innovative environment like DE Shaw.
2. **Why do you want to work at DE Shaw?**
    - I am drawn to DE Shaw because of its reputation for being at the forefront of technology and finance. The company's unique blend of software development and quantitative finance intrigues me, as it would allow me to apply my technical skills while gaining exposure to financial systems. I am particularly excited about the opportunity to work on projects that leverage algorithms and data, which aligns perfectly with my background in machine learning and data analysis.
3. **What programming languages and tools are you most proficient in?**
    - I am proficient in Python, Java, C++, JavaScript, and TypeScript. I have worked with frameworks like Angular and React for front-end development, and back-end technologies such as Flask and Guice. I also have experience with Git/GitHub for version control and machine learning libraries like NumPy, Pandas, and Keras.
4. **Describe a challenging project you worked on and how you handled it.**
    - While working at Google, I was tasked with troubleshooting slow database operations using a large language model in Java. It was challenging because I had to optimize performance across multiple layers of an existing infrastructure. I designed an RPC action and method that leveraged additional metadata fields for better traceability and reduced manual intervention, improving the debugging process and enhancing performance. I learned to work closely with cross-functional teams and effectively manage project timelines.
5. **How do you approach debugging code?**
    - My approach to debugging is methodical. I first isolate the issue by writing tests or logging to narrow down the faulty area. Then, I use tools like debuggers or profilers to understand the root cause. At Google, I worked on augmenting the trace formatter, which required adding new metadata fields for better traceability, and I would employ similar techniques—tracing and logging—to address issues effectively.
6. **What is your experience with collaborative coding?**
    - I have extensive experience working in collaborative environments. At Google, I collaborated with cross-functional teams using Git and GitHub for version control, and I strictly followed the code review process to ensure the highest code quality. Additionally, as a Teaching Assistant at Howard University, I supported students

in learning Python programming through collaborative workshops, reinforcing the importance of teamwork.

7. **How do you manage your time when working on multiple projects?**
    - I prioritize tasks based on deadlines and complexity. For example, while working on my AI-based chess game project and a resume analyzer, I broke the tasks into smaller components and used tools like GitHub Issues to track progress. I also allocate time for testing and reviews, ensuring quality across all projects. This approach helps me stay organized and meet deadlines consistently.
8. **Tell me about a time you improved an existing system.**
    - At Google, I improved the trace retrieval system by adding metadata fields to the trace formatter, which significantly streamlined the debugging process for database performance issues. This reduced the time spent on manual trace inspections and allowed for faster retrieval and storage of debugging information, which improved overall system efficiency.
9. **What are your career goals, and how does this internship fit into them?**
    - My long-term career goal is to become a well-rounded software engineer with expertise in backend development and algorithmic problem-solving, ideally within a tech-driven financial environment. This internship at DE Shaw aligns perfectly with my goals as it would allow me to further develop my technical skills while gaining valuable exposure to the intersection of software development and finance.
10. **How do you handle feedback and improve upon it?**

- I view feedback as an essential tool for growth. During my time as a Software Engineering Intern at Google, I received constructive feedback on my unit tests, which initially lacked some edge cases. I immediately took the feedback onboard, revisited my test cases, and ensured that they covered a broader range of scenarios. This experience taught me the value of thorough testing and being open to feedback for continuous improvement.