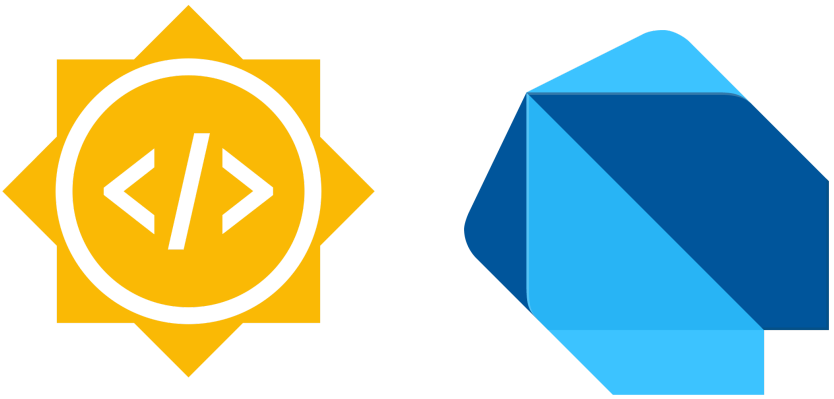
PROJECT PROPOSAL

GOOGLE SUMMER OF CODE 2025



PROJECT TITLE

USE AN LLM TO TRANSLATE JAVA/KOTLIN TUTORIAL SNIPPETS INTO DART JNIGEN CODE

To get comment access to the original Google Doc which was used to generate this PDF, please refer to the following link - https://docs.google.com/document/d/1cP1KQbszymyeG0PM77RgL-FXq-N1cnt3yegmGhe2Suo/edit?usp=sharing

Note that only **Mentors' Email IDs** have been given access to viewing and commenting

CONTENTS

CONTACT INFORMATION

- Name: **Udhay Adithya**
- Email: udhayxd@gmail.com
- Github
- Website
- LinkedIn
- Location: Amravati, Andhra Pradesh, India, UTC+5:30
- University: Vellore Institute of Technology, Andhra Pradesh
- Major: Computer Science & Engineering
- Degree: Bachelor of Technology
- Year: Sophomore, 2nd Year

MENTORS

- Daco Harkes
    - dacoharkes@google.com
    - dcharkes (Daco Harkes) - GitHub
- Hossein Yousefi
    - yousefi@google.com
    - HosseinYousefi (Hossein Yousefi) - GitHub

PROJECT DESCRIPTION

Create an AI-powered tool that translates Java/Kotlin code snippets into Dart code compatible with JNIgen-generated bindings. The tool will leverage a Large Language Model (LLM) to generate Dart equivalents for native Java/Kotlin APIs, reducing the manual effort required to integrate native Android libraries with Dart through JNIgen.

The project will explore various approaches to optimizing code generation, including:

- Evaluating the effectiveness of simple prompt engineering versus iterative refinement using feedback from the Dart analyzer.
- Automating the process of running JNIgen, generating Dart bindings, and validating the AI-generated code against these bindings.
- Investigating potential applications such as a browser extension that enhances documentation websites by providing Dart-compatible JNIgen translations for Java/Kotlin samples.

IMPLEMENTATION PROCESS

USAGE

SAMPLE PROJECT

I've completed the sample project.

Here's the secret GitHub Gist:

VIDEO DEMO

MILESTONES AND DELIVERABLES

I propose to divide the project into four small milestones/deliverables to produce a sequential progress report through the GSoC. They are NOT of equal sizes/time requirements.

Milestone #1:
Milestone #2:
Milestone #3:
Milestone #4:

GSOC 2025 TIMELINE FOR REFERENCE

May 8 - 18:00 UTC

- Accepted GSoC contributor projects announced

May 8 - June 1

- Community Bonding Period | GSoC contributors get to know mentors, read documentation, and get up to speed to begin working on their projects

June 2

- Coding officially begins!

July 14 - 18:00 UTC

- Mentors and GSoC contributors can begin submitting midterm evaluations

July 18 - 18:00 UTC

- Midterm evaluation deadline (standard coding period)

July 14 - August 25

- Work Period | GSoC contributors work on their project with guidance from Mentors

August 25 - September 1 - 18:00 UTC

- Final week: GSoC contributors submit their final work product and their final mentor evaluation (standard coding period)

PREDICTED PROJECT TIMELINE

- **Community Bonding Period (May 8 - June 1)**

  This is the period where I will get to know my mentors better. I will also extensively ask questions and attempt to clarify the doubts and queries in my mind, to get a clear understanding of the project. Although Google recommends this 3-week bonding period to be entirely for the introduction of GSoC Contributors into their projects, since we are going to build a brand new package, I propose to begin coding from the 2nd or 3rd week of this period, thus adding a headstart.

- **Coding Period (June 2 - July 14)**
  - **Week 1 (June 2 - June 8)**
  - **Week 2 (June 9 - June 15)**
  - **Week 3 (June 16 - June 22)**
  - **Week 4 (June 23 - June 29)**
  - **Week 5 (June 30 - July 6)**
  - **Week 6 (July 7 - July 13)**

- **Midterm Evaluation Submission (July 14 - July 18)**
  - Projects are submitted to the mentors and the GSoC portal.
- **Work Period (July 14 - August 25)**

    - **Week 7 (July 14 - July 20)**
    - **Week 8 (July 21 - July 27)**
    - **Week 9 (July 28 - August 3)**
    - **Week 10 (August 4 - August 10)**
    - **Week 11 (August 11 - August 17)**
    - **Week 11 (August 18 - August 24)**

- **Final Week (August 25 - September 1)**

  The final project and the report are submitted to the mentors and on the GSoC portal.

MOTIVATION

Many factors motivate me to contribute to this project. I've tried listing some of them below.

- Dart is one of my favourite programming languages and contributing to its enhancements is of immense value to me. I was introduced to Dart via the Flutter SDK around 2 years ago, and ever since then, I've begun to deeply appreciate the simplicity as well as the complexity of this beautiful language.
- I love the power of open-source and have always wanted to contribute meaningfully to projects that make a real impact. While I have built several personal projects, including chatbots, web scrapers, and mobile applications, I see this as an opportunity to give back to the community while refining my skills.
- I have closely followed Google Summer of Code for some time now and have always aspired to be a part of it. The structured mentorship and the opportunity to work on real-world open-source projects make it an ideal platform for me to grow as a developer.
- Although I have a colourful GitHub contribution graph, and built some projects by myself I've never practically contributed to any Open Source organisation. I have yet to contribute extensively to a large open-source organization. GSoC presents the perfect opportunity to collaborate with experienced developers, learn industry best practices, and enhance my ability to work on large-scale codebases.
- Beyond GSoC, I intend to remain involved in open-source development, maintaining and improving this project wherever possible. This is not just a one-time opportunity for me but a stepping stone toward deeper engagement with the open-source community.
- … many more reasons motivate me to contribute to this project

COMMITMENT

For GSoC 2024, I have structured my commitment as follows:

- As I would not have any major responsibilities during the summer, and would even receive a vacation from my university, I shall be able to aptly dedicate time to the program with ease.
- I plan to contribute a standard of 30 - 40 hours to the project every week, thus ensuring its fruitful completion.
- My university schedule is highly flexible, allowing me to adjust my routine as needed. I will also be available during standard work hours if required, ensuring seamless communication and collaboration with mentors.
- I am responsive to emails, text messages, and phone calls and can promptly join screen-sharing sessions or video calls for discussions and code reviews. This will enable me to receive feedback effectively and refine my contributions as needed.
- Additionally, I can be reached via various communication platforms, including Discord, LinkedIn, Slack, and other messaging services, ensuring smooth and efficient collaboration throughout the program.

ABOUT ME

I'm Udhay Adithya, an undergraduate student with a deep passion for technology and software development. My programming journey began at the age of 15 when I started writing scripts for small Python-based games and developing basic applications. However, during my high school years in a hostel, I had no access to a PC or laptop, which temporarily paused my learning.

Upon entering university, I found the perfect opportunity to dive back into programming, expanding my knowledge across multiple domains. I developed Python-based chatbots and web scrapers to fetch academic details from my university's portal. To enhance the student experience, I also built a mobile app that provides seamless access to our academic portal, making navigation and information retrieval much easier.

Beyond mobile and web development, I have explored the world of augmented reality, publishing interactive effects for Facebook, Instagram, and Messenger using Meta Spark AR Studio. These effects have collectively gained over a billion impressions, showcasing my ability to create engaging digital experiences.

I strongly believe in "learning by doing" and thrive on challenges that push my limits. I am deeply committed to working on projects that add value and make a meaningful impact. Perfection and attention to detail are fundamental to my work ethic—I strive to complete every project with dedication rather than just getting it done.

My efforts and innovations have led me to be a finalist in the prestigious 5G and 6G Hackathon conducted by the Ministry of Communications and Department of Telecommunications (DoT) India. Additionally, I have always been passionate about open-source contributions, recognizing them as a powerful way to gain and share knowledge. Though I previously struggled to find the right time and project, I now see open-source as an exciting and fulfilling avenue to give back to the community.

With a mindset driven by curiosity and persistence, I continue to explore, build, and contribute—always trying my best to create solutions that matter.

WHY YOU SHOULD ACCEPT MY PROPOSAL

Contributing to open-source has always been a goal of mine, as it provides a unique opportunity to learn, improve, and collaborate with like-minded developers. While I have gained significant knowledge through self-driven projects, I have always wanted to contribute meaningfully to an open-source initiative. This project aligns perfectly with my interests and skills, making it an ideal opportunity for me to grow as a developer while making a real impact.

If selected for this initiative, I am committed to dedicating my time and effort not just during GSoC but beyond it. My approach to projects has always been driven by a passion for perfection, attention to detail, and a strong desire to create solutions that add value. I believe in seeing things through to completion rather than just working on them superficially.

This project is not just a "summer internship" for me—it is a crucial step in my journey as a developer. It will allow me to contribute to something meaningful while refining my skills and learning from the community. My level of commitment and enthusiasm for this project will be reflected in my contributions, ensuring that I leave a lasting impact while continuously growing as an open-source developer.