- **Name:** Shikhaliyev Anar
- **Project Title:**

  Design and development of a Web Cache Management Simulator for Algorithm Evaluation
- What are you going to do?

  I am going to design and develop a web cache management simulator for evaluating different caching algorithms and strategies. The simulator will allow the implementation of various caching algorithms, simulate workloads, collect performance metrics, and enable comparative analysis.
- 2. How is it done today? Current Limitations?

  Currently, web cache management is often evaluated through theoretical analysis, limited-scale experiments, or simulation tools but, these approaches may have limitations in terms of scalability, or flexibility in evaluating a wide range of caching algorithms and workloads. Additionally, existing simulators may lack customization options or fail to provide comprehensive performance metrics.
- 3. What is your idea to do something better?

  The idea is to develop a custom web cache management simulator that addresses the limitations mentioned above. The simulator will allow for the implementation of various caching algorithms, support realistic workload generation, provide performance metrics, and enable comparative analysis.
- 4. Who will benefit from your work? Why?

  The research community, computer scientists, and developers working on web caching and performance optimization may benefit from this work. The simulator will provide a valuable tool for evaluating caching algorithms, comparing strategies, and gaining insights into cache management techniques.
- 5. What risks do you anticipate?

  Some potential risks may include the complexity of implementing various caching algorithms within the simulator, ensuring the realism of the workload generation, and validating the accuracy of performance metrics. Additionally, there may be challenges in optimizing the simulator's performance and scalability while maintaining flexibility and usability.
- 6. Out-of-pocket costs? Complete within 11 weeks?

  I believe it is a doable project to be completed in 11 weeks(at least to some degree, being able to handle a few major caching algorithms), considering possible hardware limitations, available tools, and collecting datasets.
- 7. Midterm results?

  By midterm, I am aiming to complete the design and some degree of implementation of the simulator which would be able to handle some caching algorithms.
- 8. Final Demonstration?

  In the final demonstration, I will present a functional web cache management simulator

with the ability to handle a range of caching algorithms and comparable results highlighting the strength and weaknesses of different caching strategies.