AVION CPU

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*Abstract* — Avion CPU is designed with Verilog language, using Von Neumann architecture. Our CPU has 9 instructions: Load, Store, Adding, Subbing, Multiplying, Jumping, Conditional jumping, No operation and Halting.

Keywords — FPGA, CPU.

# Introductıon

The Avion Micro CPU is a chip project, which is designed with Verilog language, using Von Neumann architecture. The processor has been updated via the Verilog language. The processor can run operations which can change between 5 states and can solve 3 test cases.

# System Archıtecture

The Avion Micro CPU uses the Von Neumann architecture where both the program instructions and the data share a common place in memory. This Simplifies the design, makes the processor more efficient and reduces the cost to produce the chip.

# Software Used

The Verilog language has been used to translate code into functional hardware.

Verilog is a hardware description language (HDL) used to model and simulate digital circuits and systems. It is widely used for designing and verifying integrated circuits (ICs), field-programmable gate arrays (FPGAs), and digital logic

# Results

The final design of the Micro Chip can perform 9 different operations that allow for the processing of numbers. It can run the four arithmetic operations. Also, it’s able to load and storing, jump and conditional jumping, no operation and halting.

While developing the processing unit we have deepened our understanding of processors, the Verilog language and circuitry.

##### Project team

Furkan Akın:

* 10th grader at Nakkaştepe Campus Bahçeşehir Science and Technology High School
* Programmer in Cosmos Robot Works (FRC team)
* Python Pro graduated from Kodland
* Coursera - Python for Genomic Data Science graduate
* AvionChip graduate

Bartu Gerdan:

* 10th grader at Nakkaştepe Campus Bahçeşehir Science and Technology High School.
* AvionChip graduate
* Coursera- Python for Genomic Data Science graduate
* Participant in the Cosmos Robotics Competition held at Bahçeşehir College Nakkaştepe Campus

##### Reference Files

<https://youtu.be/9Pf3x8fuH00?si=TkiEp2mGNyq6K97y>

<https://github.com/furkan9akin/Avion-CPU-Design-Project>

##### References