Victor Berbenets
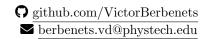
 github.com/VictorBerbenets
 berbenets.vd@phystech.edu

EDUCATION

MIPT(Moscow Institute of Physics and Thechnology) 2022 - 2026
DREC(Department of Radio Engineering and Cybernatics) *Current GPA: 7.09/10*

COURSEWORK

Main Courses: Discrete Math, Linear Algebra, Calculus, Physics, Computer techologies, Uses and Applications of C++ (by K. I. Vladimirov), Compiler Technologies and Professional Programming (by I. R. Dedinsky)

LANGUAGES

1. Russian / Native.
2. English / B1-B2.

SKILLS

Programming Languages: C/C++, Python, x86 Assembler
Tools: Cmake, Git/GitHub, Linux, Vim, gdb, valgrind, VS Code, Latex

BEST PROJECTS

Cache | *C++, Cmake, Git, Bash, Vim* Aug. 2023
- LFU (least frequently used) cache realization.
- My first introduction to basic language concepts.

Triangles | *C++, Python, Cmake, Gtest, Git, Bash, Vim* Sep. 2023
- Detecting intersecting triangles in 3D space.
- Building your own hierarchy of geometric figures: from a point and a segment to a triangle and a plane.

AVL Tree | *C++, Graphviz, Cmake, Gtest, Git, Bash, Vim* Oct. 2023
- Implementation of an AVL-based search tree with lower-upper bound methods and Iterators.
- The main task, besides creating a tree, is to write an effective distance method that works in O(logn).

Matrix | *C++, Cmake, Gtest, Git, Bash, Vim* Oct. 2023
- Implementation of a matrix class with a method for calculating the determinant and Contiguous Iterator class.

MatrixChain | *C++, Cmake, Gtest, Git, Bash, Vim* Nov. 2023
- Efficient matrix chain multiplication.
- The program prints the optimal sequence of multiplying matrix pairs.

ParaCL | *C++, Bison, Flex, Cmake, Gtest, Git, Bash, Vim* Dec. 2023 - Feb. 2024
- Custom C language (Interpreter). Frontend was implemented with Flex & Bison.
- A large project that helped to thoroughly study the basic principles of OOP.

Graph | *C++, Cmake, Git, Bash, Vim* Feb. 2024 - Mar. 2024
- Donald Knut style representation of a graph (TAOCP 7.1). The entire graph is built on one std::vector, which stores std::variants.
- The program checks the graph for bipartiteness: if the graph is bipartite, it displays its colored representation, otherwise it displays a cycle of odd length

OfflineLCA | *C++, Cmake, Git, Bash, Vim* Mar. 2024

- Solving RMQ problem in O(n) preprocessing and answering each query in O(1)

Differentiator | *C, Graphviz, Latex, make, Git, VS Code*   Mar. 2023 - Apr. 2023
- A program that calculates derivatives with respect to all variables and outputs it all to a pdf file

CPU | *C, make, Git, VS Code*   Nov. 2022 - Jan. 2023
- Assembler: support for basic proprietary commands.
- Virtual processor: executes programs written on proprietary assembler.