

High-speed Training Using Binary Neural Networks

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Team Members



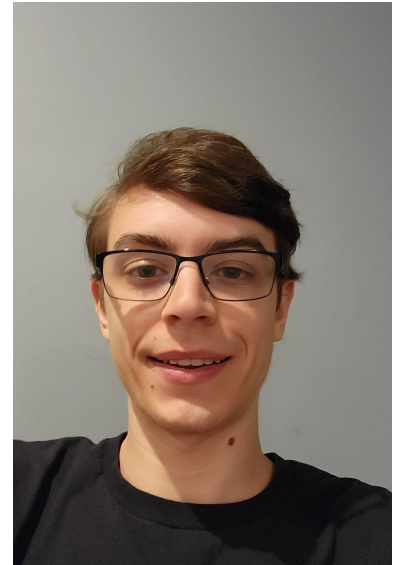
Sachin Mathew '22



Daniel Maevsky '24



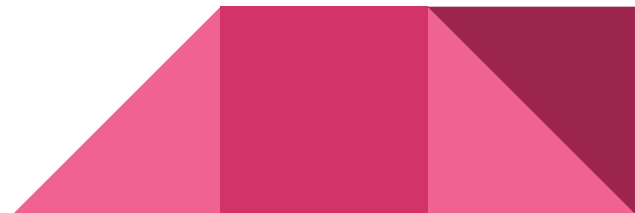
Daniel Chen '24



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Our Goals

- Training machine learning systems is currently very slow and chip space intensive.
- Recent work has shown promise by using simpler representations of numbers than the commonly used floating point ones.
- In this project, we will create and measure neural networks which use only binary or fixed point numbers for both training and inference to test their theoretical space/energy efficiency.



Weekly Progress

- Started looking through supplementary research surrounding non-floating-point neural network implementations
- Began testing of existing integer neural network schemes
- Continued implementation of fixed-point matrix algebra framework



Next Steps

- Continue looking for related papers/materials to supplement our research approach
- Develop more familiarity with Go
- Alter existing integer neural network implementation of MNIST to support fixed point weights

