Java library for parallel computation of simplex noise

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Noise

• Deterministic
• Mapping from $\mathbb{R}^n \rightarrow \mathbb{R}$
• Continuous?
  – Gradient noise
Simplex noise
Terrain generation
Textures
Goals

• Simple visualization
• Simple to use
  – Parameters
• Fast
  – Parallelization
Why?

• MTAT.03.230 Web Application Development
• Few libraries for Java
Implementation

• Existing simplex noise algorithm
  – by Stefan Gustavson
Implementation

• Parallelization

• Aparapi
  – GPU
  – CPU fallback
  – OpenCL
Implementation

• Optimization
  – Lookup table → RNG
• Memory bound calculation
Implementation

• Visualization
• Multiple octaves
• Multiple dimensions
Benchmarking
Benchmarking
Conclusion

• Fast
• Versatile
• Simple to use
  – Requires 1 DLL and JAR
• Needs a manual