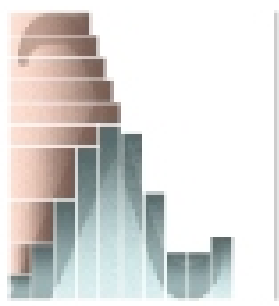


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 人之所教唯欲教之福梁者不得其死吾將以為教父



Haskell
A Purely Functional Language
 featuring static typing, higher-order functions,
 polymorphism, type classes and monadic effects



λ Calculus & Computability

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Review of the Turing Machine

- Formalism $(Q, \Gamma, \Sigma, \delta, q_{\text{start}}, q_{\text{accept}}, q_{\text{reject}})$
- Abstract Problems
- Language Problems
- Computation
- Computability vs. Decidability

Today we are looking at a completely different formal computation model – the λ -Calculus!

Calculus

- What is calculus?
 - **Calculus** is a branch of mathematics that includes the study of limits, derivatives, integrals, and infinite series.
- Examples

$$d(uv) = v(du) + u(dv) \quad \text{The product rule}$$

$$\frac{dy}{dx} = \frac{dy}{du} \frac{du}{dx} \quad \text{The chain rule}$$