a. b. **Update and Generate iteration** Fidelity 1 Process 1 Algo Multi-fidelity (2) Update the sample domain Fidelity 2 Algo 2 Process 2 $D \leftarrow D \cup (x_*, f(x_*))$ HPs Set (1) Get updated x from the extrem value Fidelity N Process K $x_* \leftarrow \operatorname{argmax}_x(u(x, g_D))$ 0.0 2.5 5.0 7.5 10.0 0.0 2.5 5.0 7.5 10.0 0.0 2.5 5.0 7.5 10.0 C. Get sample function from GP model Gaussian Process Evaluate metric score 4 Target Function Observations < set value Fidelity 2 Cross-validation Fidelity 1 metric score BO continue ≥ set value $u(x,g_D) \leftarrow g_D(x)$ n iterations Last Observations 🔶 Observations ---- Prediction 🚃 95% confidence interval Input Search Space Output ---- Utility Functions Next Best Guess