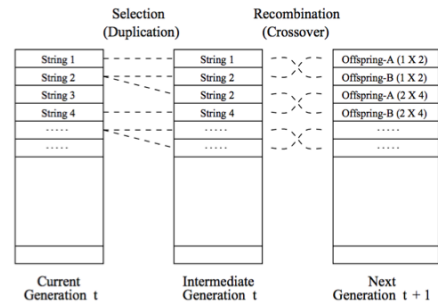


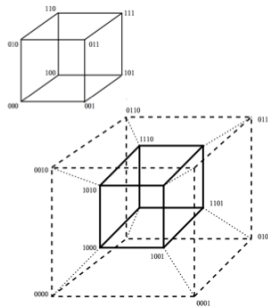
Lecture07b: A Genetic Algorithm Tutorial (Whitley 94)

CS540 3/01/18

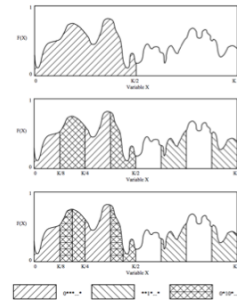
GA process



Hypercubes



Hyperplanes Analysis



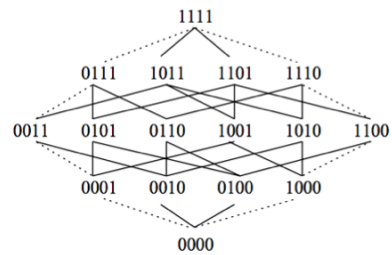
Schema Theorem (3 versions)

$$M(H, t + \text{intermediate}) = M(H, t) \frac{f(H, t)}{\bar{f}}$$

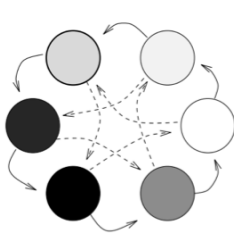
$$M(H, t + 1) = (1 - p_c) M(H, t) \frac{f(H, t)}{\bar{f}} + p_c \left[M(H, t) \frac{f(H, t)}{\bar{f}} (1 - \text{losses}) + \text{gains} \right]$$

$$P(H, t + 1) \geq P(H, t) \frac{f(H, t)}{\bar{f}} \left[1 - p_c \frac{\Delta(H)}{L-1} \left(1 - P(H, t) \frac{f(H, t)}{\bar{f}} \right) \right] (1 - p_m)^{o(H)}$$

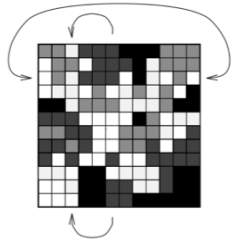
Argument for uniform crossover



Island Model & Cellular Model



An Island Model Genetic Algorithm



A Cellular Genetic Algorithm