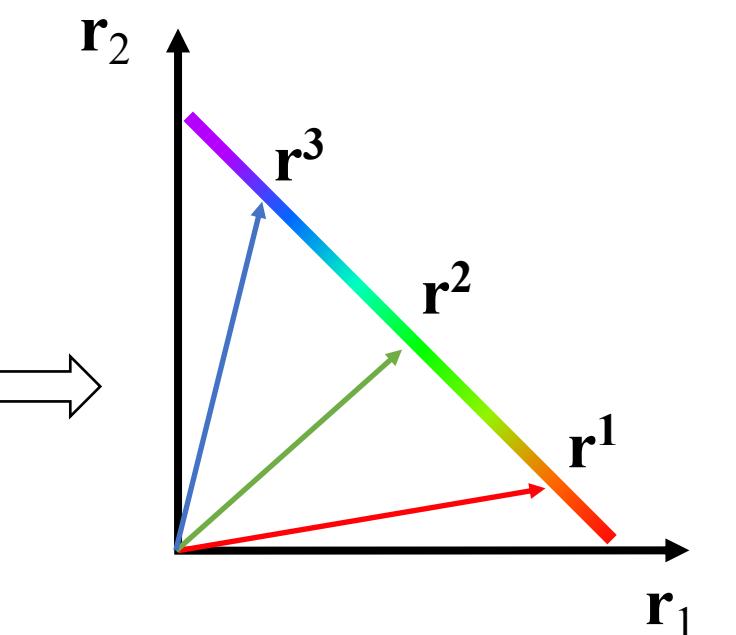


Choosing a  
Scalarization  
Function  $s(.,.)$



Preference space

a)

## Optimizing a Hypernetwork

$$\phi^* = \arg \min_{\phi} \mathbb{E}_{\mathbf{r} \sim \text{Dir}(\alpha)} s(\mathcal{F}(\mathbf{x}_r), \mathbf{r})$$

$$\mathbf{x}_r = h(\mathbf{r}, \phi^*)$$

$$\mathcal{F}(\mathbf{x}) = (f_1(\mathbf{x}), \dots, f_m(\mathbf{x}))$$

$$\mathbf{r}^i \in \mathbb{R}_{>0}^m : \sum_j^m \mathbf{r}_j^i = 1$$

b)

$$\mathbf{x}^i = \operatorname{argmin}_{\mathbf{x}} s(\mathcal{F}, \mathbf{r}^i)$$

Optimizing the  
Scalarization Function

