Repetition week 44

<u>Hypothesis testing.</u>

$$H_0 : \theta \in \Omega_0 \qquad H_1 : \theta \in \Omega_0^C$$

<u>LRT</u>

$$\lambda(x) = \frac{\sup\limits_{\Omega_0} L(\theta|x)}{\sup\limits_{\theta} L(\theta|x)} = \frac{\sup\limits_{\Omega_0} L(\theta|x)}{L(\hat{\theta}|x)} = \lambda * (T(x))$$

Reject if $\lambda(x) \leq c$.

<u>Power function</u>

$$\beta(\theta) = P_\theta(X \in R)$$

<u>UMP</u>

$$\beta(\theta) \geq \beta'(\theta) \quad \forall \theta \in \Omega_0^C$$

<u>Neyman-Pearson</u>

$$H_0 : \theta = \theta_0 \qquad H_1 : \theta = \theta_1$$

UMP level α test.

$$x \in R \text{ if } f(x|\theta_1) > kf(x|\theta_0)$$

$$x \in R^C \text{ if } f(x|\theta_1) < kf(x|\theta_0)$$

or some $k \geq 0$ and $\alpha = P_{\theta_0}(X \in R)$