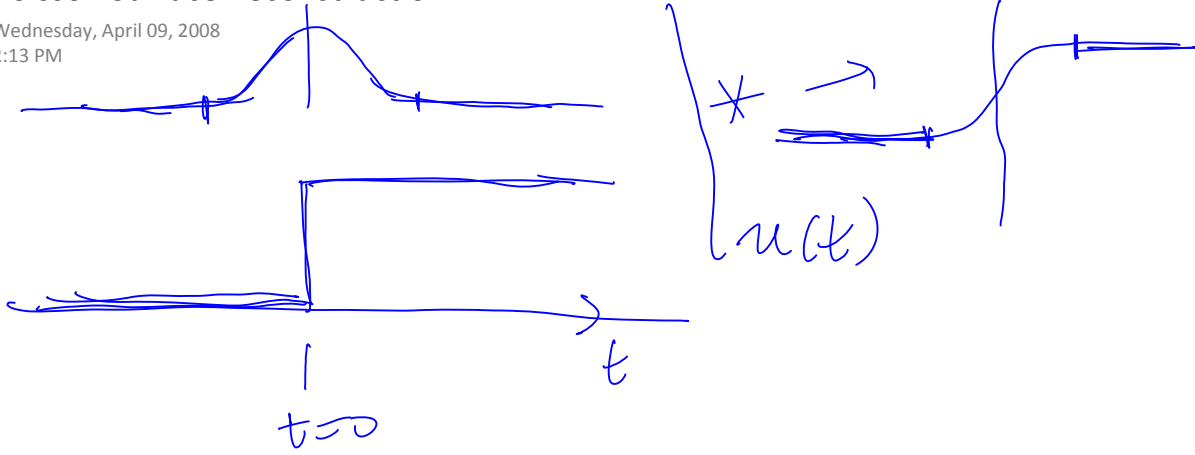
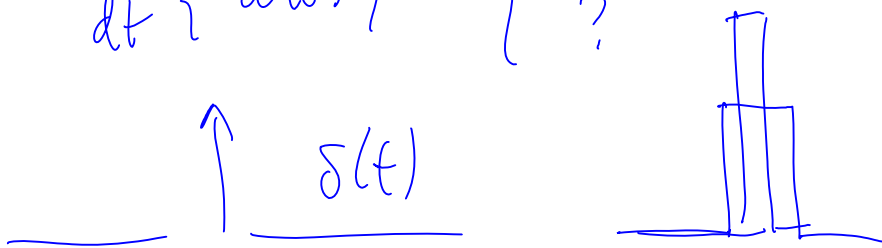


Poisson Surface Reconstruction

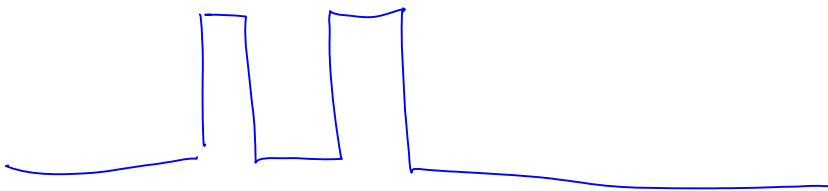
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$$\frac{d}{dt} \{u(t)\} = \begin{cases} 0 & t \neq 0 \\ ? & t = 0 \end{cases}$$



$$\int \varphi(t) \delta(t) dt = \varphi(0)$$

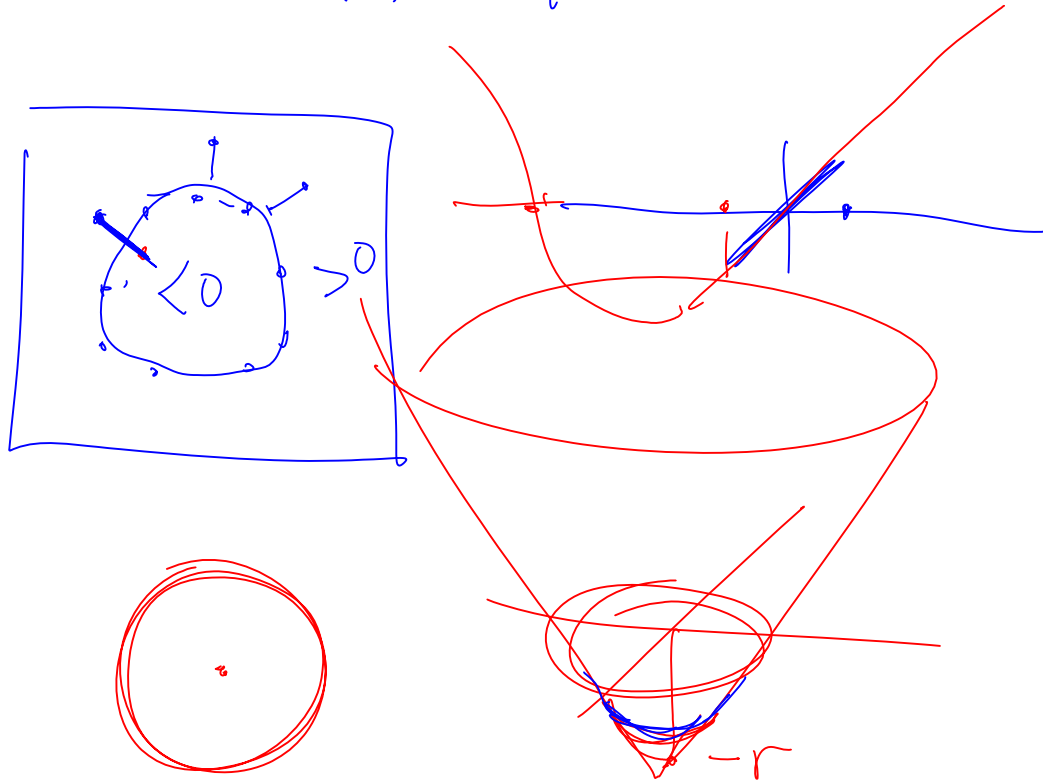


Signed Distance Function

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$$f(p) \quad \mathcal{D} = \{p_i, n_i\}$$

$$f(p_i) \approx 0 \quad \nabla f(p_i) \approx n_i$$



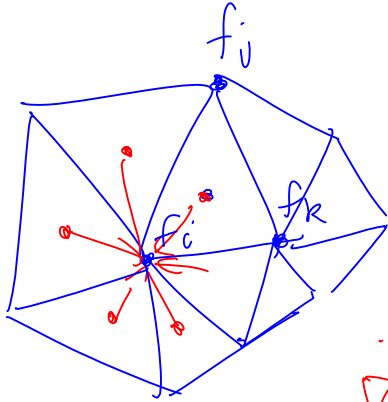
$$E(f) = \sum_{i=1}^N \|\nabla f(p_i) - n_i\|^2 + \int_V \|\text{Hf}(p)\|^2 dp$$

Triangle Meshes

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$f(p)$ pwl - functions

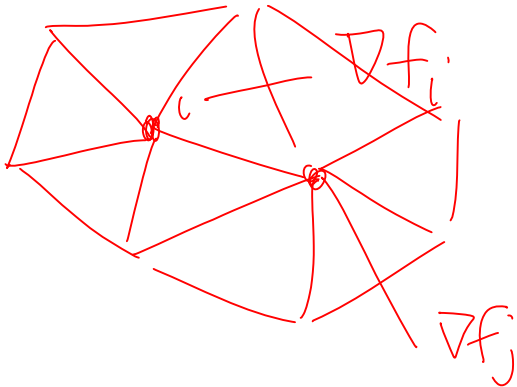
$\nabla f(p)$ - pwc



∇f_i ← { weighted average of incident fake gradients

$\nabla f(p)$ pwl function now

$$E(f) = \sum_i \|\nabla f(p_i) - n_i\|^2 + \lambda \int \|\nabla f(p)\|^2 dp$$



$$\sum_{(i,j)} \|\nabla f_j - \nabla f_i\|^2$$

Radial Basis Functions

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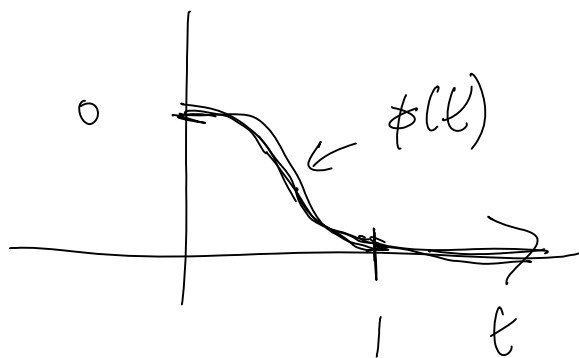
$$f(p) = \sum_j f_j \underbrace{\phi_j(p)}$$

$$\nabla \phi_j$$

$$H \phi_j$$

$$\phi \left(\frac{\|p - q_j\|}{r_j} \right) \leftarrow > 0$$

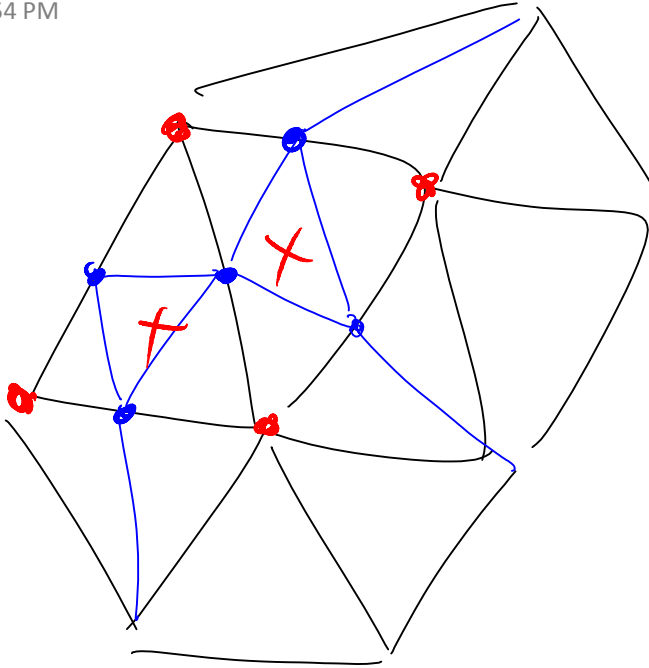
$$\|p - q_j\| \leq r_j$$



Adaptive Triangulations

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Adaptive Tetrahedralizations

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Octahedron

