Integral Equations in Visual Computing
Summer term 2008
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Assignment C3

(classroom assignment)

1. Solve the integral equation of convolution type

$$\int_0^x u(t) \cdot u(x - t) \ dt = 16 \sin(4t) \,.$$

2. Solve the following system of Volterra integral equations

$$
\begin{aligned}
u_1(x) &= \quad \sin(x) + \int_0^x u_2(t) \ dt \,, \\
u_2(x) &= \ 1 - \cos(x) - \int_0^x u_1(t) \ dt \,.
\end{aligned}
$$

3. For $\tau > 0$ calculate $\mathcal{L}[\mathbf{1}_{[0,\tau]}]$.