



# Aktiven Konturen in MATLAB

## Projektarbeit

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A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are solid grey and others are hollow with a grey outline. The lines connecting them are thin and grey, creating a dense, organic structure.

# 1. **Einleitung**

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes connected by lines, with some nodes being solid grey and others hollow with grey outlines. The overall pattern is a complex, interconnected web.

## Ziel der Projektarbeit

- ◎ Prototyp einer Applikation
  - Erkennung aktiver Konturen
  - Mittels MATLAB
- ◎ Vergleich mit bestehenden Methoden
- ◎ Regionen als zusammenhängend erkennen

## Ausgangslage (1)

### © Quellbild



Quelle: [http://upload.wikimedia.org/wikipedia/commons/3/3d/Patella\\_bipartita.jpg](http://upload.wikimedia.org/wikipedia/commons/3/3d/Patella_bipartita.jpg)

## Ausgangslage (2)

### ◎ Zielregion



Quelle: [http://upload.wikimedia.org/wikipedia/commons/3/3d/Patella\\_bipartita.jpg](http://upload.wikimedia.org/wikipedia/commons/3/3d/Patella_bipartita.jpg)

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# 2. **Grundlagen**

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes connected by lines, with some nodes being solid grey and others hollow with grey outlines. The overall pattern is a complex, interconnected web.

Aktive Konturen

Eine Art  
"Gummiband"



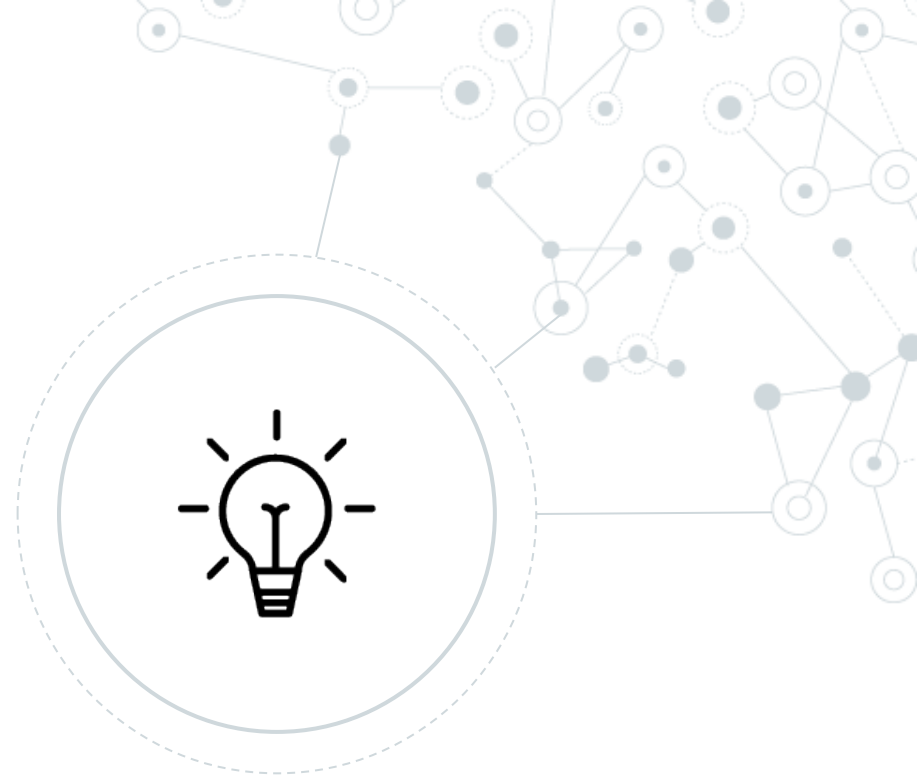
## Aktive Konturen

- ◎ Art der Segmentierung
  - modellbasiert
- ◎ Unterteilung in Regionen
  - Zuweisung der Pixel
- ◎ Parametrisierte, geschlossene Kurve
  - $r(s) = (x(s), y(s)), s \in [0, 1]$
- ◎ B-Spline-Kurve



# Kräfte

Elastizität, Krümmung  
und Bild



A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are solid grey and others are hollow with a grey outline. The lines connecting them are thin and grey, creating a dense, organic structure.

# 3. **Umsetzung**

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes and connecting lines, with some nodes being solid grey and others hollow with grey outlines. The lines are thin and grey, forming a network-like pattern.

# Herausforderungen



## **MATLAB**

Klassen

Programmier-Konzepte

Globals



## **Parameter**

Elastizität

Kurvatur

Bildkräfte



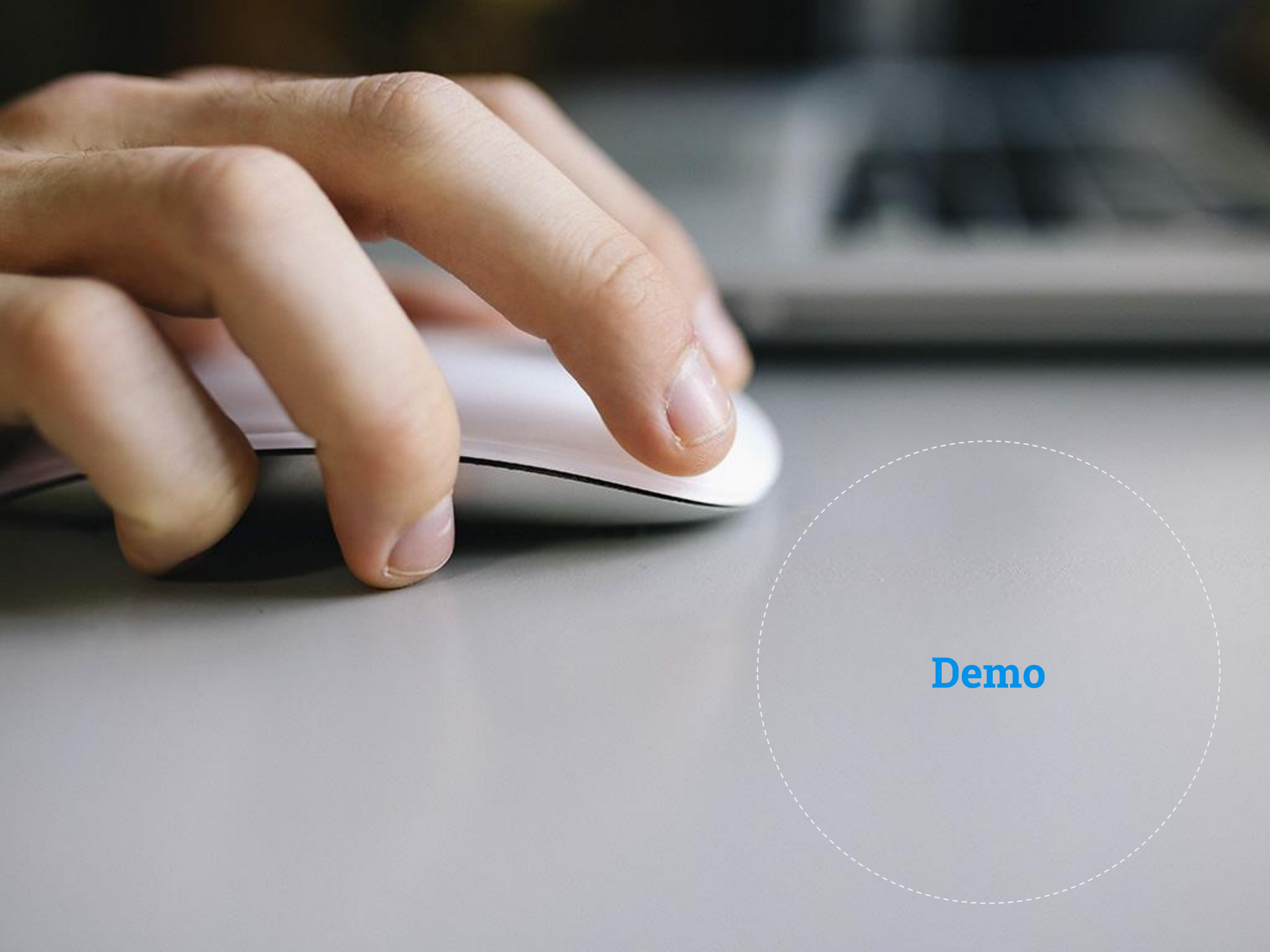
## **Bildverarbeitung**

Graustufen

Gauss

Kantenbasiert





**Demo**

A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are solid dark grey, while others are hollow with a light grey outline. The lines connecting them are thin and light grey, creating a dense, organic structure that resembles a molecular or biological network.

# 4. **Fazit**

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It consists of a cluster of interconnected nodes and lines. The nodes are small circles, some solid dark grey and some hollow with light grey outlines. The lines are thin and light grey, forming a complex, web-like pattern that suggests a network or system.

## Fazit & Ausblick



Vertiefung

MATLAB

Experimentieren



MATLAB

Vergleich(e)



Chan & Vese

# Danke!

## Fragen?

