

The background is a dark blue-grey color. It features several thin, gold-colored lines that form abstract, angular shapes. These lines are scattered across the slide, with some forming a larger, irregular shape on the left side and others forming a more complex, star-like pattern on the right side. A central gold-colored rectangle contains the main title text.

# Data Exploration

## Hautkrebserkennung

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# AGENDA

## 1. EINLEITUNG

Einführung in die Thematik

## 2. MOTIVATION

Projektziel, Dataset & Hintergrundwissen

## 3. PROJEKTPLAN

Meilensteine & Projektetappen

## 4. PROJEKT-INSIGHTS

Coding & Modelle

## 5. REFLEXION

Technische, wirtschaftliche & ethische Reflexion

# EINLEITUNG



- Aktueller Anlass: Corona
- Zahlreiche Data-Science Anwendungen (Prognose)
- Großes Potential in der Medizin



KI smarter als Experten?

# MOTIVATION



## KREBS ERKENNEN

Mit Hilfe von Bildern Krebs  
erkennen



## ISIC 2018

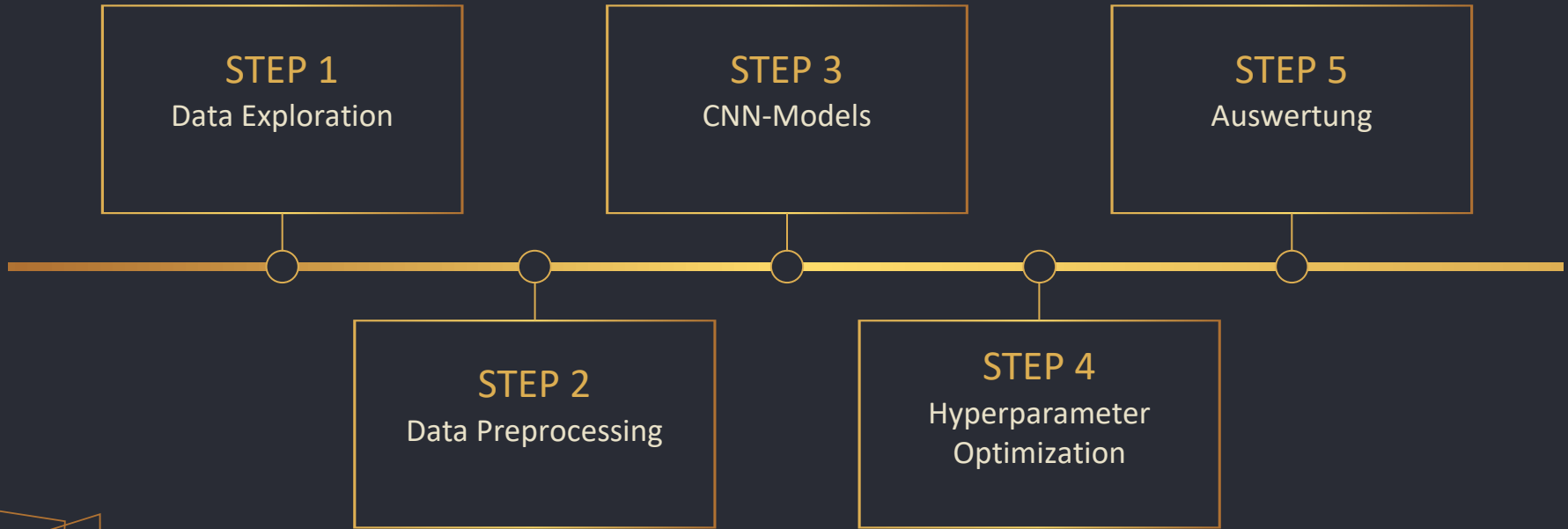
Challenge Task 3: Disease  
Classification



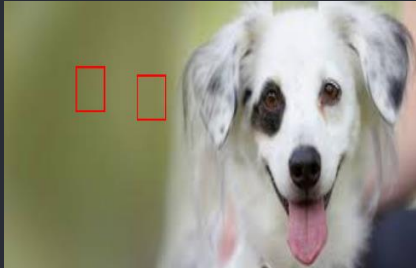
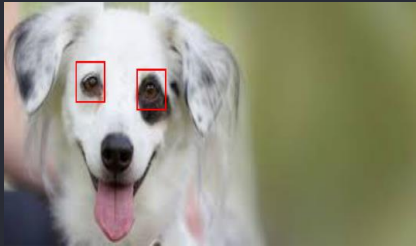
## DATASET

“Human Against Machine  
with 10000 training images”  
(HAM10000)

# PROJEKTVORGEHEN

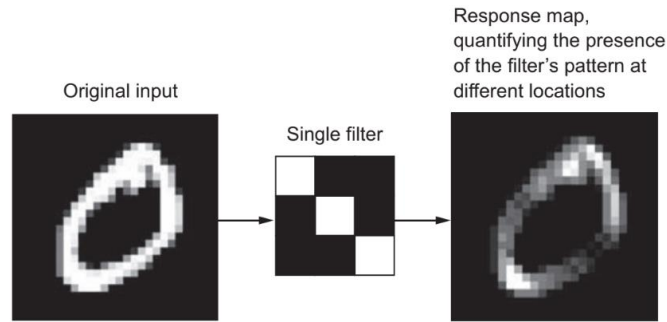


# IMAGE PROCESSING

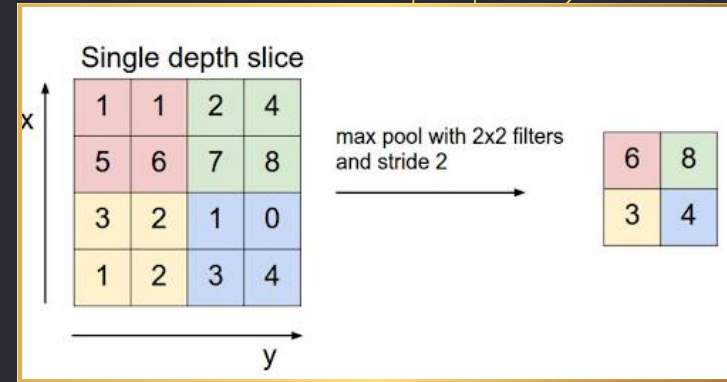


- Deep Neural Network zur Bildanalyse
- Eine Art des Multilayer Perceptrons
- CNN, um globale Features zu erhalten (nicht lokale)
- Basierend auf biologischem Prozess

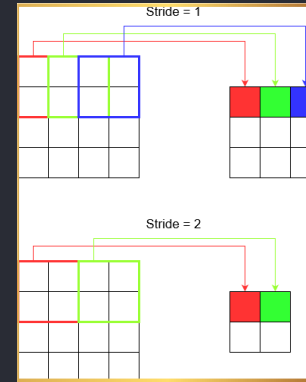
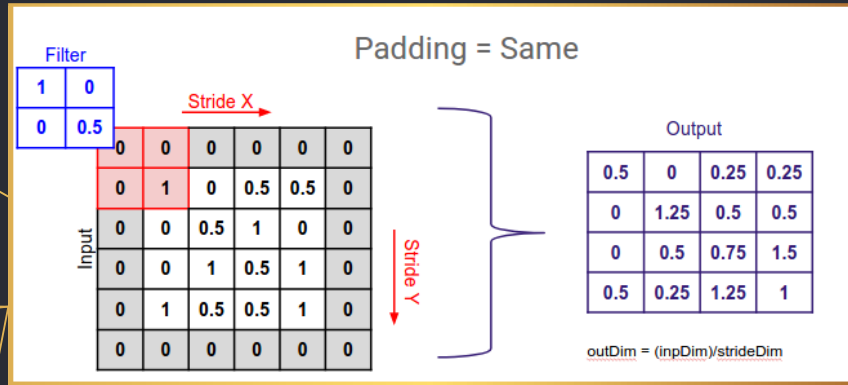
# FILTER & POOLING



**Figure 5.3** The concept of a *response map*: a 2D map of the presence of a pattern at different locations in an input



# PADDING & STRIDE





A grayscale photograph of an architectural drawing of a house, likely a cross-section or elevation. The drawing shows a house with a gabled roof, several windows, and a garage. A person's hands are visible, using drafting tools: a ruler on the left, a set square at the top, and a pencil on the right. The drawing includes various annotations and dimensions. The text "PROJECT INSIGHTS" is overlaid in the lower-left quadrant in a bold, orange, sans-serif font. The background is a light gray with some faint orange geometric lines in the top-left and bottom-right corners.

PROJECT INSIGHTS

Roof-- 407ap  
-Garagr roof

Over.

AP  
7456 Gage  
FL  
330a Door open

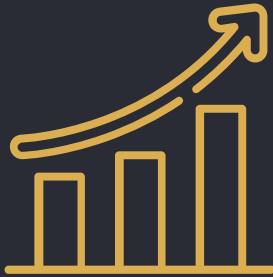
2.60

# (TECHNISCHE) Reflexion



- Anzahl der Variablen bei Hyperparameter Optimization
- Neuronales Netz = Blackbox
- Informationsverlust durch Bildgröße (28 x 28 px)
- Hauttypen

# WIRTSCHAFTLICHER NUTZEN



- Geringere Kosten durch Unterlassung unnötiger Folgeuntersuchungen
- Geringere Kosten durch ansonsten nicht erkannte Krebsarten
- Evtl. irgendwann Zeitersparnis in der Ausbildung der Ärzte

# ETHISCHE FRAGESTELLUNG



- Datensatz besteht nur aus Bildern hellhäutiger Menschen
- Bei Auswahl der Daten auf mögliche BIAS achten
- Limitierung des Modells ins Bewusstsein rufen

The background is a solid dark blue. Overlaid on this are several thin, gold-colored lines that form abstract, angular shapes. These shapes resemble stylized mountains or jagged peaks, with some lines extending from the left and right edges towards the center. A large, dark blue rectangle with a gold border is positioned in the center, containing the text.

**ENDE**  
Vielen Dank!