TITLE PAGE

- **Problem Statement ID – 1588**
- **Problem Statement Title-** Technology ideas in tertiary sectors like Hospitality, Financial Services, Entertainment and Retail.
- **Theme-**
- **PS Category- Software/Hardware**
- **Team ID-**
- **Team Name- Pied Piper**

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IDEA TITLE

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IDEA / SOLUTION :

AI driven solution helping retailers finding best placement for products in stores.

- Video data from **IR or Thermal camera (frames)** processing to generate **heatmaps**, by accumulating heat signatures over time.
- **Clustering algorithms** using unsupervised learning **(e.g., K-Means)** to identify high-traffic zones.
- Mapping of products to 'heat zones'.
- Dashboard to visualize heat maps and the correlation between sales and **foot traffic data.**
- Real-time feedback on placement effectiveness.
- Hardware Requirement: Strategic placement of IR cameras

Problem Resolution :

- **Tracking which part of store has highest foot traffic. Place promotions there to maximize exposure. Heatmaps indicating foot traffic, recommendations for product placement.**
- **Install cameras or infrared sensors in the store to capture heat signatures or foot traffic data.**

Unique Value Propositions (UVP) :

- **Help retail stores to compete with online shops**
- Monetizing this data collected by '**dynamic pricing'.**
- **Role based access control** to users of dashboard.

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TECHNICAL APPROACH

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Technology Stack:
IR video data is preprocessed using OpenCV to generate heatmaps. Preprocessing includes:

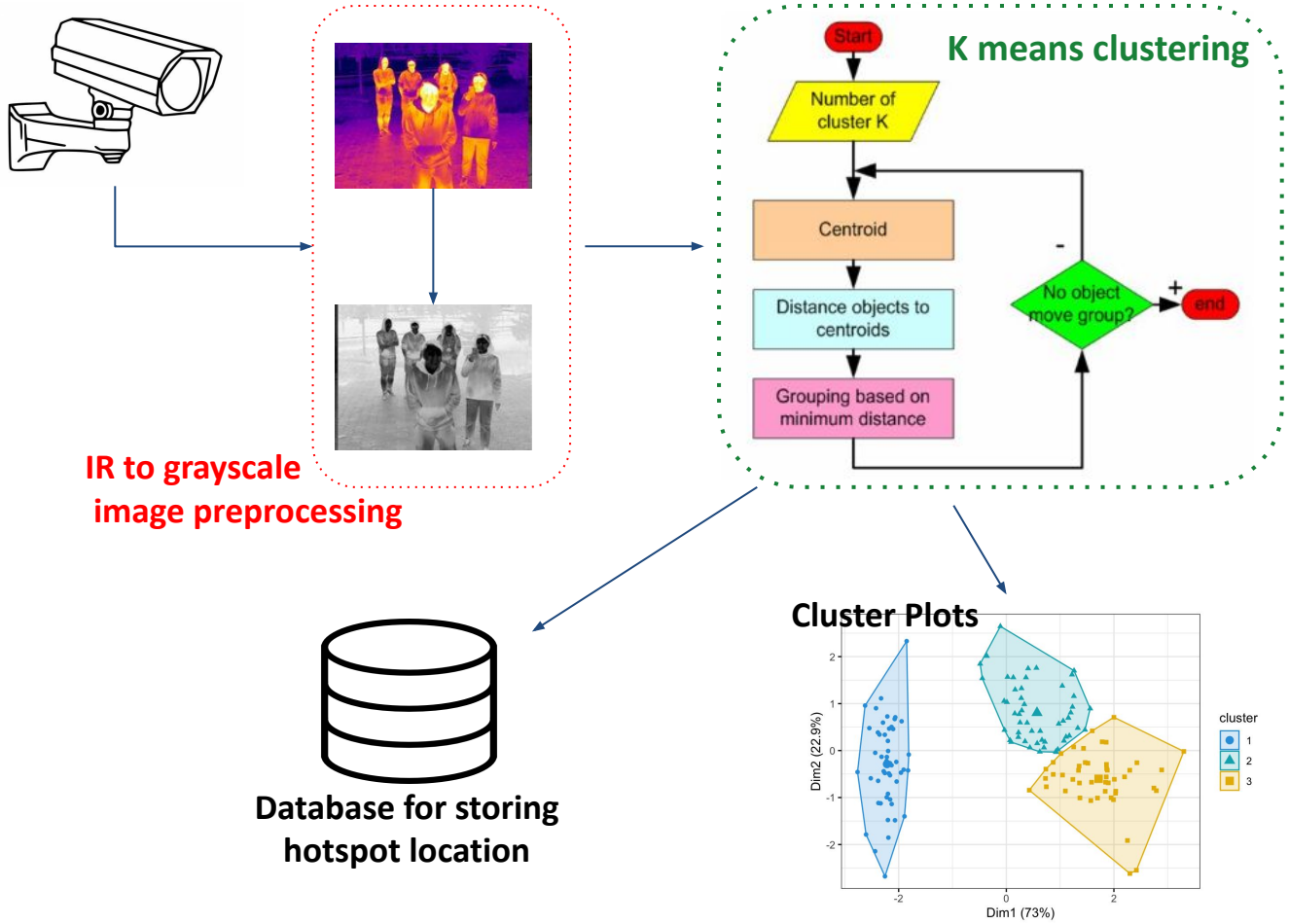
- **Gaussian Blur**
- **Normalization**

Scikit-Learn for implementing K-means clustering algo. Using object detectors like YOLOv4 as well.

MongoDB for storing location of hotspots. Predefine store zones in your database and tag the heatmap data accordingly.

Correlation between sales and foot traffic. Libraries like Chart.js or Plotly can be useful.

PROCESS FLOW ARCHITECTURE



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FEASIBILITY AND VIABILITY

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FEASIBILITY

Financial:
Implementing '**dynamic pricing'** to charge advertisers higher cost for advertising at 'hotspots' which also making other spots cheaper, leading to more adverts ultimately leading to **more revenue only at the cost of IR cameras.**

Technical:
Advanced image processing and AI techniques are mature, making the implementation **technically feasible.**

Market Related:
Allow retail stores to thrive in competitive market created by online stores

Risk:
infrared cameras may struggle in environments with reflective surfaces or strong ambient light.

Solution:
Use advanced machine learning algorithms like convolutional neural networks (CNNs) for accurate image processing.

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IMPACT AND BENEFITS

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- Potential impact on the target audience

  Positive- Improvement , Economical, New Opportunities, socialbenefits
  negative- Cost, Technology Adoption Issues

- Benefits of the solution (social, economic, environmental, etc.)

  Social - Improved Access, Empowerment, Reduction
  Economic – Productivity, Cost, Market
  ENV – Energy, Reduction, Waste

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RESEARCH AND REFERENCES

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- Details / Links of the reference and research work

Elsevier , Science Direct

IMPORTANT INSTRUCTIONS

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Please ensure below pointers are met while submitting the Idea PPT:

1. **Kindly keep the maximum slides limit up to six (6). (Including the title slide)**
2. **Try to avoid paragraphs and post your idea in points /diagrams / Infographics /pictures**
3. **Keep your explanation precise and easy to understand**
4. **Idea should be unique and novel.**
5. **You can only use provided template for making the PPT without changing the idea details pointers (mentioned in previous slides).**
6. **You need to save the file in PDF and upload the same on portal. No PPT, Word Doc or any other format will be supported.**

Note - You can delete this slide (Important Pointers) when you upload the details of your idea on SIH portal.