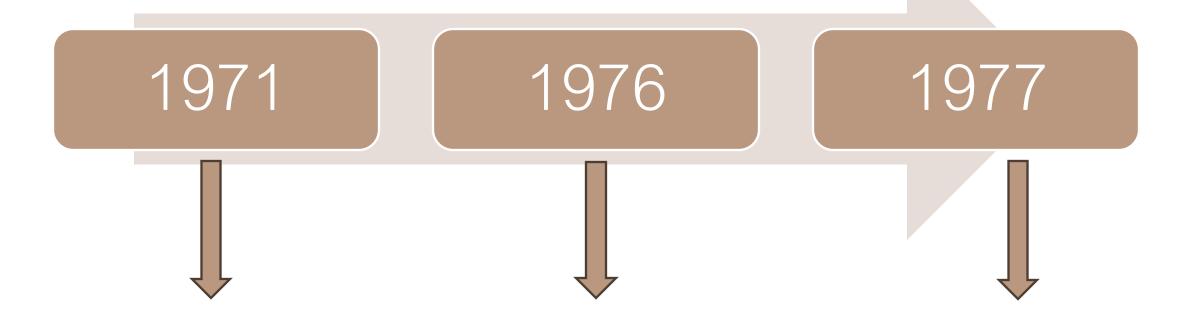


The term "artificial intelligence" (AI) was introduced in 1956 by John McCarthy at the Dartmouth Conference, where scientists came together to discuss how machines could be designed to mimic human intelligence.

In 1959, the first digital image scanner was invented, converting images into grids of numbers. This made it possible to store and manipulate images digitally.

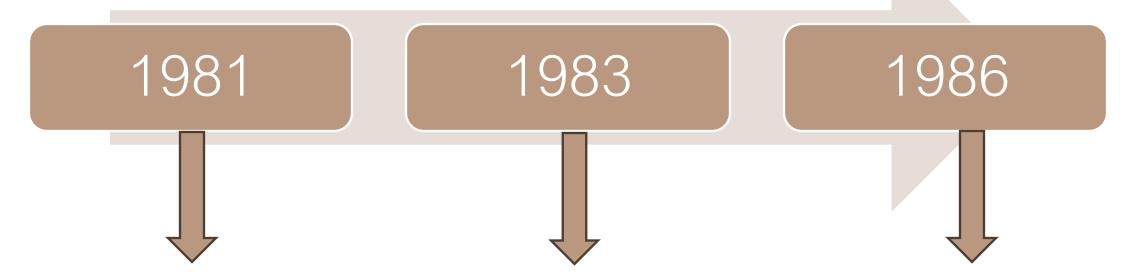
In 1963, Lawrence Roberts demonstrated that computers could identify and outline objects in images. This was an important step in computer vision, enabling machines to process visual information similarly to humans.



In 1971, Lawrence (Larry) Roberts wrote one of the first e-mail programs.

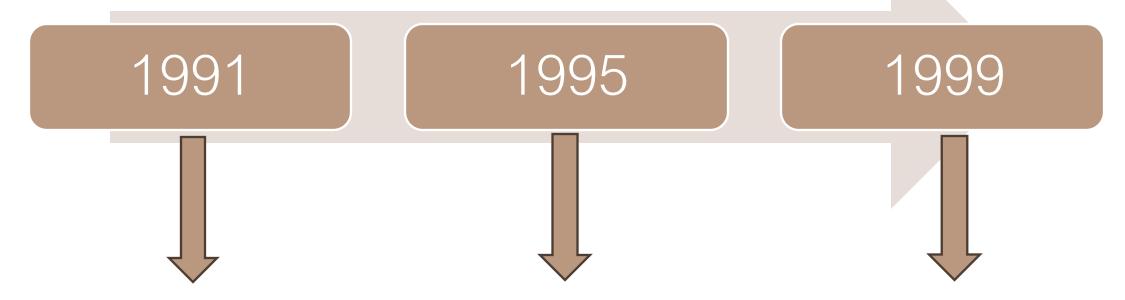
In 1976, David Marr's Vision theory used a computational approach to revolutionize the understanding of visual perception.

1977 impacted computer vision with Edge Detection and laying the groundwork for more advanced developments that followed.



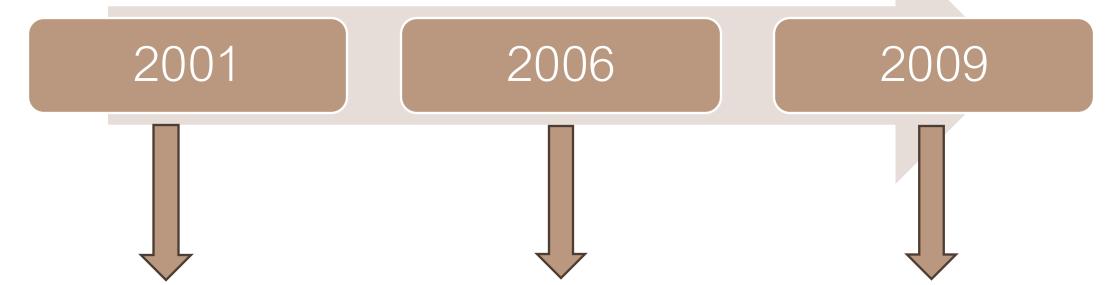
The concept of optical flow, introduced by Horn and Schunck, allowed for the estimation of motion in video sequences.

The first IEEE Conference on Computer Vision and Pattern Recognition (CVPR) was held, establishing a dedicated forum for the field. The introduction of Markov Random Fields (MRFs) for image modeling and texture synthesis broadened the scope of image analysis.



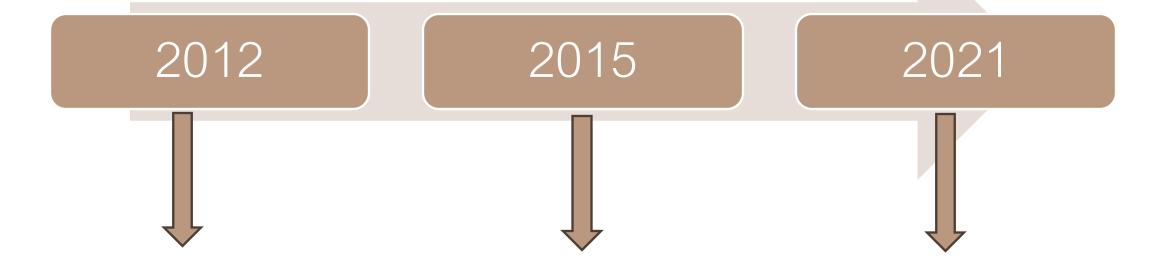
Eigenface, an application used for human face detection, was created at an earlier date but was first used in 1991. This was a groundbreaking moment computer vision because they could work on a small amount of data. While SVM (support vector machines), wasn't created for computer vision, it still played a major part because of its usefulness in classifications and regression analysis.

David Lowe invented SIFT(scale-invariant feature transform) to solve the problem of detecting and matching features across different images, regardless of scale, viewpoint, etc. This was a revolutionary addition to the field of computer vision.



The release of the Viola-Jones face detection framework marked a significant step towards real-time vision applications. Geoffrey Hinton's research on deep belief networks rekindled interest in deep learning, impacting future computer vision models.

The ImageNet project was launched, providing a large-scale dataset that would become crucial for training deep learning models in computer vision.



AlexNet, a deep convolutional neural network, won the ImageNet competition, achieving a breakthrough in image classification accuracy.

Faster R-CNN was introduced, setting a new standard for object detection and paving the way for advancements in image segmentation.

The ethical implications of facial recognition and surveillance technologies gained global attention, leading to increased regulation and scrutiny.

REFERENCES

- Encyclopedia Britannica. (n.d.). Lawrence Roberts. *Encyclopedia Britannica*. https://www.britannica.com/biography/Lawrence-Roberts
- Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences, 276*(940), 325-329.
 https://doi.org/10.1098/rstb.1976.0090
- Intelligence, Global Data Thematic. "History of Computer Vision: Timeline." *Verdict*, 8 July 2020, <u>www.verdict.co.uk/computer-vision-timeline/</u>.
- Liu, C. (n.d.). Motion Estimation I. People. https://people.csail.mit.edu/torralba/courses/6.869/lectures/lecture19/lecture19.pdf
- Wu, Z., Lin, D., & Tang, X. (n.d.). *Deep Markov Random Field for Image Modeling*. Springer. https://link.springer.com/content/pdf/10.1007/978-3-319-46723-8_18.pdf
- Institute of Electrical and Electronics Engineers Computer Society, CVPR, & IEEE. (2024, March 3). Conference on Computer Vision and Pattern Recognition. Wikipedia. https://en.wikipedia.org/wiki/Conference on Computer Vision and Pattern Recognition
- Eigenface: Recovering humans from ghost by Nev Acar (August 21, 2018), https://towardsdatascience.com/eigenfaces-recovering-humans-from-ghosts-17606c328184
- Support vector machine- Introduction to machine learning algorithms by Rohith Gandhi (June 7, 2018),
 https://towardsdatascience.com/support-vector-machine-introduction-to-machine-learning-algorithms-934a444fca47

REFERENCES

- Cen, K. (n.d.). Study of Viola-Jones Real Time Face Detector. Stanford. https://web.stanford.edu/class/cs231a/prev_projects_2016/cs231a_final_report.pdf
- Hinton, G. E., Osindero, S., & Teh, Y.-W. (n.d.). A Fast Learning Algorithm for Deep Belief Nets. Harvard. http://groups.seas.harvard.edu/courses/cs281/papers/hinton-etal-2006.pdf
- Klingler, N. (2024, August 10). ImageNet Dataset: Evolution & Applications (2024). viso.ai. https://viso.ai/deep-learning/imagenet/
- Alexnet and ImageNet: The Birth of Deep Learning. Pinecone. (n.d.). https://www.pinecone.io/learn/series/image-search/imagenet/
- Odemakinde, E. (2024, August 10). Everything about mask R-CNN: A beginner's guide. viso.ai. https://viso.ai/deep-learning/mask-r-cnn/
- Saheb, T. (2022, July 19). Ethically contentious aspects of artificial intelligence surveillance: a social science perspective. SpringerLink. https://link.springer.com/article/10.1007/s43681-022-00196-y