A01 Historical Timeline

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Assignment A01

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Historical Timeline of Computer Vision

1700 to 1900	Scientific community were understanding the principles of light and vision until the first camera system was created by Kodak in 1884.
1957	The first digital image scanner was developed by Dr. Russell A. Kirsch.
1962	The research of David Hubel and Torsten Wiesel on Visual Cortex has an impact on the development of computer vision algorithms.
1963	Larry Roberts, the father of Computer Vision, presented his thesis on machine perception of three-dimensional solids.
1966	The first summer vision project was done. The purpose was to identify objects, background and chaos in the picture.
1967	Woodrow W. Bledsoe and I. Kanter presented their thesis on the secret history of facial recognition
1968	Ivan Sutherland, the computer scientist, developed the Sword of Damocles, a head-mounted display system.
1972	Richard Duda and Peter Hart developed the Hough Transform.
1973	Michael A. Fischler and Robert A. Elschlager introduced the concept of "pictorial structure".
1980	Autonutis, Inc was the pioneer in computer vision and industrial automation. They specialized in developing computer vision and robotic system into the manufacturing process.
1980	Kunihiko Fukushima developed the NeoCognitron, a neural network model for pattern recognition and image processing.
1981	Martin A. Fischler and Robert C. Bolles introduced the RanSAC algorithm in their paper "Random Sample Consensus: A Paradigm for Model Fitting with Applications to Image Analysis and Automated Cartography."
1981	Bruce D. Lucas and Takeo Kanade introduced the Lucas-Kanade Optical Flow algorithm to estimate motion of objects.
1983	The book "Vision' was published by David Marr. It has created a great impact on computer vision and visual perception.
1986	"The variation approach to shape from shading" was published by Horn and Brooks for 3D shape recovery from images.
1987	The Deriche edge detector was another addition to Computer Vision. It is a recursive filter to suppress noise in the image.

1988	Active contour Model (ACM) is used for image segmentation and boundary detection. It's often called "Snakes". It was introduced by Michael Kass, Andrew Witkin, and Demetri Terzopoulos.
1989	Mumford-Shah functional is a mathematical model used for image segmentation and restoration.
1991	Matthew Turk and Alex Pentland developed the Eigenfaces algorithm. It is a facial recognition method based on principal component analysis (PCA).
1993	Tony Lindeberg introduced the Scale-space blob detection. It is essential for object recognition and shape analysis.
1999	Michael Carson introduced "Blobworld: A System for Region-based Image Indexing and Retrieval."
1999	SIFT (Scale-Invariant Feature Transform) is a valuable tool for object recognition and image stitching.
2000	OpenCV (Open-Source Computer Vision Library) was developed by Intel. It's an open-source computer vision and machine learning software library. It is suitable for video analysis, robotics, and augmented reality.
2001	Haar Cascades are a machine learning object detection method used to identify objects in images or video. They were developed by Paul Viola and Michael Jones.
2004	The Viola Jones Face Detection Model which was developed by Paul Viola and Michael Jones, is a pioneering and influential approach for detecting faces in images and videos.
2005	HOG (Histogram of Oriented Gradients) was first introduced by Robert K. McConnel in 1986. Later HOG algorithm was introduced by Navneet Dalal and Bill Triggs.
2005	Visual SLAM (Simultaneous Localization and Mapping) is a subset of SLAM. The algorithm is done by matching observed features with the features in the map.
2006	SURF (Speeded-Up Robust Features) was developed by Herbert Bay, Tinne Tuytelaars, and Luc Van Gool. It is a feature detection and description algorithm in computer vision.
2007	PCVR (Principal Curvature-Based Region) is a computer vision and image processing technique. It is effective in object detection, image segmentation, and medical image analysis.
2009	The PASCAL VOC (Visual Object Classes) and ImageNet competitions provide large-scale datasets and benchmark challenges. These competitions played a crucial role in the advancements in computer vision algorithm.
2010	ILSVRC (ImageNet Large Scale Visual Recognition Challenge) is an annual competition in computer vision and image recognition. Participants had to develop algorithms and models to correctly classify objects within images.
2010	Microsoft released the Kinetic sensor. It's a combination of RGB (color) and depth information for real time 3D object recognition and tracking.
2012	Alex Krizhevsky, Ilya Sutskever, and Geoffrey Hinton developed the AlexNet. It was the winning entry in the ImageNet Large Scale Visual Recognition Challenge in 2012.

2014	COCO Data Set by Microsoft has become a prominent dataset in Computer Vision. It has diversity of object categories and complex scenes.
2014	GANs (Generative Adversarial Network) was introduced by Ian Goodfellow and his colleagues. It's a deep learning framework. It has become a powerful tool for generating data.
2014	Another tool that materialized was the VGG. It is one of the classic deep learning architectures widely used because of its simplicity and effectiveness.
2015	SMPL (Skinned Multi-Person Linear) is primarily used for modeling and animating the human body in a realistic and efficient manner.
2015	Alexander Mordvintsev, Google engineer, created DeepDream. It's a convolutional neural network method to enhance and modify images in a unique and psychedelic way.
2015	Neural Style Transfer is a deep learning technique that combines the content of one image with the artistic style of another.
2015	Shaoqing Ren, Kaiming Hi, Ross Girshick, and Jian Sun introduced the Faster R-CNN. It is a deep learning-based object detection framework.
2017	OpenPose was developed by the CMU Perceptual Computing Lab. It is used to identify and locate key body parts and joints in images or video frames.
2017	Kaiming He, Georgia Gkioxari, Piotr Dollar, and Ross Girshick developed the Mask R-CNN. It is an extension of the Faster R-CNN object detection framework. It's a powerful tool for various computer vision tasks that require detailed object segmentation.
2018	YOLO V3 offered real-time object detection capabilities. It has improved efficiency and speed compared to traditional two-stage object detection systems.
2019	Google's EfficientNet is the more recent architecture designed to balance between model accuracy and computational efficiency. It is often used when computational resources are limited.
2020	VIT (Vision Transformers) are a class of deep learning models that apply the Transformer architecture.
2020	OpenAI developed the GP-3. It is a large language model with natural language processing capabilities. It's designed for text-related tasks and vision language tasks.

Reference:
https://letsdatascience.com/learn/history/history-of-computer-vision/