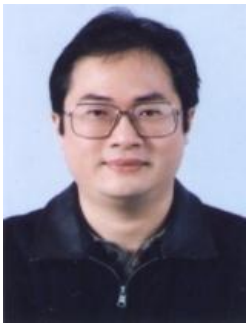
Faculty and Research Interests

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Education:

Ph.D. in CSIE, National Taiwan University, 1990

Experience:

2009~Current	Chair Prof., National Taiwan University of Science and Technology.
Summer,1999	Visiting Scholar, University of Washington.
1995~2009	Prof., National Taiwan University of Science and Technology.
1990~1995	Associate Prof., National Taiwan University of Science and Technology.

Awards:

2009~2012	Distinguished Scholar Research Project Award, National Science Council, Taiwan.
2004~2007	Distinguished Research Award, National Science Council, Taiwan.

Research Directions:

- Digital Image Processing:
  - Image demosaicing techniques.
  - Reversible data hiding techniques.
- H.26X Video Compression Techniques:
  - Error concealment techniques.
  - 3D video coding.
- Pattern Recognition and Computer Vision
  - Line, circle, and ellipse detection.
  - Vision-based industrial applications.

Research Projects:

- **The research on mosaic images :**

-The project focuses on the demosaicing, postprocessing, compression, watermarking, error concealment, zooming algorithm, super-resolution, arbitrary-ratio resizing algorithm, and reversible data hiding techniques.

- **The research on image and video compression:**

-The project focuses on H.26X-based error concealment and coding techniques.

- **The research on color images enhancement and primary informational features extraction (Three-year Taiwan-Russia Research Cooperation Project)**

Demosaicing Research Results



- The edge directions of a mosaic image are estimated by using adaptive heterogeneity-projection masks.
- Combining the luminance estimation mask and Sobel operator, we can determine the weight of each pixel in the interpolation estimation.
- Based on the objective and subjective measures, the proposed demosaicing algorithm yields better quality performance when compared with several recently published algorithms.

H.264-based Error Concealment Research Results



- Based on the reversible data hiding technique, the proposed intra-frame error concealment algorithm has no image quality degradation for H.264/AVC sequences.
- A modified circular embedding scheme, which has better recovering advantage when the corrupted macroblocks (MBs) are in FMO mode, is presented to embed motion vectors into MBs in intra–frames.
- The quality of recovered video sequence obtained by the proposed algorithm is indeed superior to several recently published algorithms.