

# Ali Zandifar

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**Status:** Permanent US Resident, ready to relocate

## Education

- **Ph.D. in Electrical Engineering/Computer Vision**, University of Maryland at College Park, Aug 2004.
  - Thesis: Computer Vision for Scene Text Analysis
  - Supervisors: Dr. Ramani Duraiswami, Prof. Larry S. Davis and Prof. Rama Chellappa
- **M.Sc. in Electrical Engineering/Control**, Sharif University of Technology, Iran, May 1997
  - Thesis: Position Estimation of a Moving Object via Optical Method using Extended Kalman Filter with pseudo measurements”
  - Supervisor: Prof. Mohammad A. Masoumnia
- **B.Sc. in Electrical Engineering**, Sharif University of Technology, Iran, Feb 1994

## Experience

- **Senior Member of Technical Staff**, Novafora Inc. San Jose, CA, Mar 08-present  
*Responsibilities: Computer vision and image and video processing algorithm development, benchmark design, experimental performance evaluation, prototype development, patent writing*
  - Developed interactive image segmentation algorithms based on a differential geometric framework
  - Developed an interactive video annotation tool including feature-based object tracking, temporal segmentation, feature-based visual similarity of objects, and semantic web data interfaces (1 patent).
  - Actively participated in other projects, including robust invariant feature detection and description, partial video indexing, retrieval, similarity and correspondence, shot detection, and logo detection.
  - Developed parallel performance evaluation and experiment report generation platform on a cluster computer.
- **Senior Member of Technical Staff**, Epson R&D Inc. San Jose CA, Sep 04-Mar 08  
*Responsibilities: Computer vision, image and video processing, applied estimation and pattern recognition algorithm development, software development and release, patent and funding proposal writing, customer support and project management.*
  - Developed watermarking module for document images in Japanese and English, including innovative embedding and extracting bit-strings, approximate bit-string matching and error correction (6 patents)
  - Visual inspection of microscopic industrial inkjet-printed circuit boards (PCB) project: architected, designed, and built the system from scratch, updated device SDKs, developed high image quality capture, PCB simulation from dot-pattern maps, calibration, automatic scanning and registration, fault detection, SIFT feature extraction and description for large PCB circuits and efficient memory management (6 patents)

- Developed deformation correction of scanned document images: flat/non flat documents, Japanese or English content based on the textual layout (2 patents)
- Fast camera calibration with minimal user effort (1 patent)
- **Graduate Research Assistant**, University of Maryland at College Park, Jan 00-Aug04  
*Responsibilities: Graduate research in the fields of computer vision and image and video processing, applied estimation and pattern recognition, software development, scientific publication.*
  - Developed vision-based system for scene text analysis including modules to capture high-quality video/images of a scene, text segmentation, unwarping planar objects that text printed on them integrating with OCR and text-to-speech. The input was a raw video and the output was an audio interpretation of the text. The objective was to access textual information for the visually impaired.
  - Developed innovative dewarping algorithms based on a differential geometric framework for non-planar objects that text printed on them.
  - Developed fast multipole method-based numerical tools for thin-plate spline elastic mapping
  - Speech compression using multi-resolution filter banks and gender recognition
  - Fitting animated head to mesh models

## Publications

1. **Ali Zandifar**, “Unwarping scanned image of Japanese/English documents”, Int. Conf. on Image analysis and processing (ICIAP) 2007.
2. N. Gumerov, **Ali Zandifar**, R. Duraiswami and L. S. Davis, “3D Structure Recovery and Unwarping Surfaces Applicable to Planes”, Int. journal of computer vision (IJCV), Dec 2004.
3. **Ali Zandifar**, R. Duraiswami and L. S. Davis, ”Video-based Framework for Analysis of Presentations/Posters” , Int. journal of document analysis and rectification (IJ DAR), Nov 2004.
4. N. Gumerov, **Ali Zandifar**, R. Duraiswami and L. S. Davis, `Structure of Applicable Surfaces from Single Views’, ECCV 2004.
5. **Ali Zandifar**, Ser-Nam Lim, N. Gumerov and R. Duraiswami, “Fast Evaluation of Thin Plate Spline (TPS) in Computer Vision”, IEEE int. conf. of image processing, ICIP 2004.
6. **Ali Zandifar**, A. Chahine, R. Duraiswami and L. S. Davis, “Video-based Interface to Textual Information for the Visually Impaired’, IEEE int. conf. at multimodal interfaces, 2002.

## Patents

1. **Ali Zandifar** and Anoop Bhattacharjya, “Fast imaging system calibration”, EPSON R&D Inc., US Patent filed Ser. No 11/260,964.
2. **Ali Zandifar** and Anoop Bhattacharjya, “Distortion correction of a captured image”, EPSON R&D Inc., US Patent filed Ser. No. 11/679,664.
3. **Ali Zandifar** and Anoop Bhattacharjya, “Distortion correction of a scanned image”, EPSON R&D Inc., US Patent filed Ser. No. 11/679, 648.
4. **Ali Zandifar** and Anoop Bhattacharjya, “Low-memory auto-focus/auto-exposure, EPSON R&D Inc., US Patent filed Ser. No. 11/ 778968.
5. **Ali Zandifar**, “Characterization of a printed droplet”, Epson R&D Inc., US Patent filed Ser. No. 11/85154.
6. **Ali Zandifar**, Che-bin Liu and Jing Xiao, “Embedding data in images”, Epson R&D Inc., US Patent filed in Nov. 2007.

7. **Ali Zandifar**, Che-bin Liu and Jing Xiao, “Extracting data from images”, EPSON R&D Inc., US Patent filed in Nov. 2007.
8. **Ali Zandifar** and Che-bin Liu, “Identifying embedded data in an image”, US Patent filed in Nov 2007.
9. **Ali Zandifar** and Jing Xiao, “Identifying steganographic data in an image”, US Patent filed in Nov 2007.
10. **Ali Zandifar** and Jing Xiao, “Segmenting a string using similarity values”, Epson R&D Inc., Us Patent filed in Nov 2007.
11. **Ali Zandifar** and Jing Xiao, “String reconstruction using multiple strings”, Epson R&D Inc., US Patent filed in Aug 2008.
12. **Ali Zandifar**, High resolution inspection of large scale PCB substrates by vision-based feedback, Epson R&D Inc., US Patent filed in Aug 2008.
13. **Ali Zandifar**, “Simulation of large PCB substrate dot-pattern bitmap by inkjet printing technology”, Epson R&D Inc., US Patent filed in Aug 2008.
14. **Ali Zandifar** and Jing Xiao, “High quality image capture, intelligent scanning and registration of large PCB substrates”, Epson R&D Inc., US Patent filed in Aug 2008.
15. **Ali Zandifar**, “Fault Detection of large PCB substrates by inkjet printing”, Epson R&D Inc., US Patent filed in Aug 2008.
16. **Ali Zandifar**, Gilles De Victor, Alex and Michael Bronstein, “Hypervideo annotation”, Novafora Inc, disclosure submitted for filing.

### Honors and Awards

- **Graduate Research Assistantship**, University of Maryland, Jan 00-Aug 04
- **Graduate Teaching Assistantship**, University of Maryland, Aug 99-Jan 00
- **Ranked 51<sup>th</sup>/10,000:** Nationwide M.Sc. university entrance contest, Aug 94
- **Ranked 157<sup>th</sup>/300,000:** Nationwide B.Sc. university entrance contest, Aug 89

### Skills

- **Programming:** MATLAB, C/C++, MySQL, Java script, CPPUnit, Perl (basic)
- **Libraries & tools:** OpenCV, wxWidgets, MFC, OpenGL, GLUT, AviSynth, Condor
- **Platforms:** Windows 95/98/NT/2000/XP, Linux

### Professional Affiliations

- *Member, Institute of Electrical and Electronic Engineers (IEEE)*
- *Reviewer, ICPR, IJECE, WirelessCOM, IEEE-ITIP and ACCV*

### Miscellaneous

- **Languages:** English , Farsi (mother tongue), Spanish

### References

- **Prof. Ron Kimmel** ([ron@cs.technion.ac.il](mailto:ron@cs.technion.ac.il)) -- Fellow and Co-founder, Novafora Inc. San Jose, CA, USA, and Professor, Computer Science Department, Technion , Israel.
- **Dr. Alex Bronstein**([alexbron@ieee.org](mailto:alexbron@ieee.org)) -- VP of Video Technology. and Co-founder, Novafora Inc., San Jose, CA, USA.

- **Dr. Michael Bronstein** ([bronstein@ieee.org](mailto:bronstein@ieee.org)) -- VP of Video Technology. and Co-founder, Novafora Inc., San Jose, CA, USA
- **Dr. Anoop Bhattacharjya** ([anoop@asterpix.com](mailto:anoop@asterpix.com)) -- CTO Asterpix Inc., San Jose, CA, USA,
- **Dr. Ramani Duraiswami** ([ramani@umiacs.umd.edu](mailto:ramani@umiacs.umd.edu)) -- Associate Professor, Computer Science Department, University of Maryland at College Park, USA.
- **Prof. Larry S. Davis** ([lsd@umiacs.umd.edu](mailto:lsd@umiacs.umd.edu)) -- Professor, Computer Science Department, University of Maryland at College Park, USA.