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# SALIH DIKBAS

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## EXPERIENCE

### STAFF ENGINEER, QUALCOMM INC.; SAN DIEGO, CA – 2013-PRESENT

- Developed and implemented a new Auto Focus (AF) statistics module for improved performance and better lowlight support
- Developed and implemented film grain noise adder to improve subjective visual quality.
- Developed busyness detection algorithm for smooth, edge, texture discrimination.
- Updated 3A (Auto Focus/Exposure/White Balance) statistics engine to support single-frame HDR sensors
- Co-designed and co-implemented a modular and flexible C++ code base for ISP pipeline development by employing design patterns.
- Design, implementation, testing, and verification of ISP pipeline modules (black level, bad pixel correction, demosaic, gamma correction, color correction, color conversion, noise reduction, edge enhancement, scaler, local/global contrast enhancement)

### SYSTEMS ENGINEER, TEXAS INSTRUMENTS INC.; DALLAS, TX – 2007-2013

- Developed a low-complexity lossless frame memory compression algorithm
- Developed a guaranteed-rate near-lossless frame memory compression algorithm
- Developed a cost-effective multiple-output scaler algorithm
- Developed an efficient single-frame noise estimation algorithm
- Integration, evaluation, and optimization of video processing modules (deinterlacer, scaler, noise filter, sharpness and contrast enhancement, color processing, video format conversion, etc.)
- Experience and solid understanding of the image signal processing (ISP) pipeline for image sensors.
- Experience in design, calibration, and tuning of ISP modules (noise filtering, enhancement, CCM, etc.)
- Co-authored the call for proposal of TI for next-generation video standard (HEVC)

### RESEARCHER/INSTRUCTOR, GEORGIA INSTITUTE OF TECHNOLOGY; ATLANTA, GA – 2005-2008

- Developed a frame rate up-conversion algorithm
- Developed a fast motion-estimation algorithm
- Developed video quality enhancement algorithms
- Developed a color edge detection algorithm
- Development of various sensor based projects involving SmartBadge4 sensor platform running embedded Linux, e.g., light detector, 2axis accelerometer and proximity sensor
- Taught ECE3710 "Circuits and Electronics" for three semesters

### DSP ENGINEER, SANTEL NETWORKS; FREEMONT, CA – 2003-2004

- Designed fixed point ECHO/NEXT canceler for high-speed copper media (10GBASE-T)
- Implemented and optimized DFE/FFE equalizer for high-speed copper media
- Worked on error control coding options for 10GBASE-T (TCM+RS, etc.)
- Optimized simulation code for 10G fiber communication system transceiver

- Performed testing, debugging of Santel-Nova3 Chip (10G analog equalizer with digital adaptation) using BERT, oscilloscope and spectrum analyzer

INSTRUCTOR, CLEMSON UNIVERSITY; CLEMSON, SC – 1999-2003

- Taught ECE 307 "Basic Electrical Engineering"
- Taught Circuit Analysis Problems Classes (ECE 204, ECE 263)
- Coordinated ECE 309 "Basic Electrical Engineering Lab-I"

GRADUATE RESEARCH/LAB ASSISTANT, CLEMSON UNIVERSITY; CLEMSON, SC – 1996-1998

- Implemented Errors Only, Errors and Erasures Reed-Solomon decoder
- Implemented Viterbi decoder (hard/soft decision)

## EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GA – PH.D., 2005-2011

CLEMSON UNIVERSITY, CLEMSON, SC – M.S., 1996-1998

MIDDLE EAST TECHNICAL UNIVERSITY (ABET ACCREDITED), ANKARA, TURKEY – B.S., 1992-1996

## PUBLICATIONS

- **Salih Dikbas**, Yucel Altunbasak, "A Novel True-Motion Estimation Algorithm and Its Application to Motion-Compensated Temporal Frame Interpolation," IEEE Transactions on Image Processing, Vol. 22, No. 8, pp. 2931-2945, August 2013
- **Salih Dikbas**, Tarik Arici, and Yucel Altunbasak, "Fast Motion Estimation With Interpolation-Free Sub-Sample Accuracy," IEEE Transactions on Circuits and Systems for Video Technology, Vol. 20, No. 7, pp. 1047-1051, July 2010
- **Salih Dikbas** and Fan Zhai, "Lossless image compression using adjustable fractional line-buffer," Signal Processing: Image Communication, Vol. 25, No. 5, Special Issue on Breakthrough Hardware Architectures, June 2010, pp. 345-351
- Tarik Arici, **Salih Dikbas**, and Yucel Altunbasak, "A Histogram Modification Framework and Its Application for Image Contrast Enhancement," IEEE Transactions on Image Processing, Vol. 18, No. 9, pp. 1921-1935, September 2009
- **Salih Dikbas**, Tarik Arici, and Yucel Altunbasak, "Chrominance Edge Preserving Grayscale Transformation with Approximate First Principal Component for Color Edge Detection," Image Processing, 2007. ICIP 2007. IEEE International Conference on, Vol. 2, pp. 261-264, October 2007
- Tarik Arici and **Salih Dikbas**, "Skin-aware Local Contrast Enhancement," Image Processing, 2007. ICIP 2007. IEEE International Conference on, Vol. 1, pp. 521-524, October 2007

- Tarik Arici, **Salih Dikbas**, and Yucel Altunbasak, "Local Contrast Enhancement using 2-Dimensional Recursive Filters," IEEE Workshop on Multimedia Signal Processing, MMSP 2006, pp. 329-333, October 2006

### PATENTS

- Mustafa Keskin and Salih Dikbas, "Camera Zoom Based on Sensor Based," filed with the USPTO on September 28, 2015.
- Salih Dikbas and Fan Zhai, "Method and Apparatus for compressing for Data relating to an image or video," Filed with the USPTO on July 2, 2009
- Salih Dikbas, Mehmet Umut Demircin, and Minhua Zhou, "Guaranteed-rate tiled image data compression," Filed with the USPTO on Feb 10, 2011

### SKILLS

- Excellent programming skills and hands on experience in the C/C++ programming languages
- Experience with writing and optimizing code on Texas Instruments C6x DSP processor
- Experience in different operating systems : Windows, Mac OS X, Unix /linux
- Hands on experience in the Python, Bash, Java, Perl languages
- Excellent experience in software packages: Matlab, Microsoft Visual Studio, Visio, MS-Office, LaTeX

### HONORS/ACTIVITIES

- Ranked in first 500 among 1 million people in the university entrance example
- Turkish Petroleum Foundation Graduate Fellowship
- Turkish Education Foundation scholarship throughout undergraduate studies
- Third ranking in Mathematics Competition of "The Scientific and Technical Research Council of Turkey"
- Turkish preparation team for the Mathematics Olympiads 1990
- Treasurer of Clemson University Turkish Student Association (served 2 years)
- Chair/co-chair of Turkish Employee Initiative at Texas Instruments Inc.
- Member of IEEE

### REFERENCES

Available upon request