Journal of Graphomathematical Algorithms:

The Journal of Graphomathematical Algorithms is a collection of papers dealing with electrical engineering problems that are addressed using algorithms written with National Instruments’ graphics-based programming language LabVIEW. The algorithm results in a computer-based instrument, or virtual instrument (VI), with a front panel for both input of data and display of computed results (output). The computations are carried out in the block diagram that contains the algorithm in graphomathematical code. The papers are written within Dr. Norian’s computing group in the Electrical and Computer Engineering Department of Lehigh University.
Volume 15 (April 2010)

1) Virtual Power factor Correction Instrument With a Variable Capacitor
   Mike Quashie and K. H. Norian, 319

2) LabVIEW Musical Synthesizer
   C. David Gerlach and K. H. Norian, 326

3) LabVIEW Analysis of an Electrometer Circuit
   Hal Rigley and K. H, Norian, 335

Volume 14 (May 2009)

1) Virtual Instrument to Characterize a Solar Cell
   Ken Jackson and K.H. Norian, 308

2) Characterization of Solar Cell Capacitance Using Graphomathematical Code
   Mark Musheno and K.H. Norian, 311

Volume 13 (May 2008)

1) Graphomathematical Audio Effects Processor
   Nicholas J. Hinnerschitz and K.H. Norian, 286

2) A DSP Audio Crossover and Equalizer
   Shawn Bialas and K.H. Norian, 300

Volume 12 (May 2007)

1) A Virtual Instrument for Image Resizing
   Andrew J. Snyder and K.H. Norian, 250

2) A Virtual Instrument for Color Filtering or Enhancing
   Andrew J. Snyder and K.H. Norian, 261

3) A Virtual Instrument for Adjusting Brightness
   Andrew J. Snyder and K.H. Norian, 267

4) Method for Real Time Creation of Audio Visualization Using LabVIEW
   Brandon Davis and K.H. Norian, 269

5) A virtual instrument for simulation of FM radio using the audible spectrum and an algorithm
   for frequency calculation in the time domain.
   Ian M. Hughes and K.H. Norian, 274
**Volume 11 (December 2006)**

1) Virtual instrument for the study of Pericardial Friction Rub Heart Condition  
Allen Yeung and K.H. Norian, 217

2) Virtual Instrument for Shifting the Pitch of a Sampled Waveform  
Joshua L. Callen and K.H. Norian, 223

3) Virtual instrument for the study of Early and Late Systolic Heart Murmurs  
Christopher C. O’Brien and K.H. Norian, 228

4) Virtual Instrument to study the Effect of Red Wine Consumption on the Heart  
Courtney Dolan, John G. Stout and K. H. Norian, 236

5) A Graphomathematical Multi-Band Compressor  
Greg K. Smith and K.H. Norian, 241

**Volume 10 (May 2006)**

1) Maze Solving Algorithm with Application in Image Processing  
David E. Negro and K.H. Norian, 135

2) Virtual Keyboard Synthesizer  
Satoshi Ebisawa and K.H. Norian, 142

3) Virtual Instrument for Face Recognition  
Satiesh Muniandy and K.H. Norian, 145

4) A Graphomathematical Algorithm for an Animated Game with Artificial Intelligence  
Jeff Karper and K.H. Norian, 154

5) A Golf Ball Flight Trajectory Simulator  
Scott Boyle and K.H. Norian, 163

6) The Tic-Tac-Toe Game Implemented as a Virtual Instrument  
Joseph V. Marranca and K.H. Norian, 168

7) Gaming Virtual Instrument  
Brian Filizzi and K.H. Norian, 192

8) A Graphomathematical Approach for Characterizing and Comparing Signatures  
Hillary J. Blenke and K.H. Norian, 194

9) Virtual Instrument for Detecting a Phonocardiogram Abnormality
Christopher M. Flouris and K.H. Norian, 203

10) Graphomathematical Code for Single Company Analysis
Ryan D. Goldenberg and K.H. Norian, 210

**Volume 9 (November 2005)**

1) Interactive Graphomathematical Guitar Tuner
Keith Painter and K. H. Norian, 44

2) Virtual Instrument for Near Real Time Input and Output
Keith Painter and K. H. Norian, 51

3) Voice Recognition Algorithm with Application to Mobile Robotics
David E. Negro and K.H. Norian, 57

4) A Graphomathematical Variable Play Rate Wav Player
Brian J. Filizzi and K.H. Norian, 63

5) A Virtual Instrument for Note Detection and User Controlled Pitch Shift
Jeff Karper and K.H. Norian, 67

6) Graphomathematical Echo Generator
Satoshi Ebisawa and K.H. Norian, 82

7) Characteristics of Laughter Waveforms
Sean Siegwart and K.H. Norian, 85

8) Virtual Instrument for the Simulation of an EKG Waveform
Daniel P. Monahan and K.H. Norian, 93

9) Graphomathematical Code for Simulating the Retinal Ganglion Cell in an Applied Steady-State Electric Field,
Matthew J. Chabalko and K. H. Norian, 96

10) A Graphomathematical Instrument for Text to Speech Synthesis
Dimitri Demergis and K.H. Norian, 106

11) A Graphical Technique for Characterizing Unique Letter Combinations
Hillary J. Blenke and K.H. Norian, 113

12) A Graphomathematical DSP Module for Guitarists
Samuel J. Philip and K.H. Norian, 117
13) A Graphomathematical Tremolo Effect for Guitarists
Samuel J. Philip and K.H. Norian, 121

14) A Graphomathematical Delay Effect for Guitarists
Samuel J. Philip and K.H. Norian, 124

15) A Graphomathematical Ten-Band Equalizer Effect for Guitarists
Samuel J. Philip and K.H. Norian, 127

Volume 8 (May 2005)

Christopher Chojnacki and K.H. Norian, 5.

Chris Eby and K.H. Norian, 14.

3) A Decibel Level Control System.
Ryan D. Goldenberg and K.H. Norian, 19.

Keith Painter and K.H. Norian, 22.

5) Graphomathematical Algorithm for 13 Bit Binary Strand Decoding System.

6) Algorithm for Controlling Duration and Pitch of a Sampled Waveform.
Ryan Hansen and K.H. Norian, 36.

Volume 7 (November 2004)

1) A Graphomathematical Drum Synthesizer.
Chris S. Gawryluk and K.H. Norian, 5.

2) The Effects of Lossy Compression Implemented as a Virtual Instrument.
Rob Dennis and K.H. Norian, 12.

3) Algorithm for Continuous Playback and Analysis of a Sampled Waveform.
Ryan P. Hansen and K.H. Norian, 25.

4) An Equalizer implemented using Graphomathematical Code.
Sam J. Philip and K.H. Norian, 29.
Ryan Botzler and K.H. Norian, 32.

6) A Mathematical Algorithm for the Processing and Analysis of Whispered Vowels. 
David Munsky and K.H. Norian, 39.

7) Simulating the steady-state behavior of an Avct-Pacemaker. 
Sebastian P Sommer and K.H. Norian, 42.

8) Virtual Instrument for Speech Characterization. 
Chris Eby and K.H. Norian, 46.

9) Graphomathmatical Algorithm for Microphone Mismatch Correlation. 
Dayne Mickelson and K.H. Norian, 50.

10) Formant and Anti-Formant Analysis of Consonant-Vowel Transitions in the English Language. 
Christopher J. Florio and K.H. Norian, 55.

Volume 6 (May 2004)

1) An automated technique for feature extraction in second order differential waveforms of consonant-vowel transitions. 
K.H. Norian, 5.

Juan F. Roche and K.H. Norian, 18.


4) Modeling electrical transmission lines using graphical mathematics. 
Jason Haas and K.H. Norian, 47.

Ryan Botzler and K.H. Norian, 57.

6) An Audio Compression Method using graphical signal processing. 
William Bennett and K.H. Norian, 75.

7) Quadrature Amplitude Modulation (QAM) Model. 
Shaun Elabdouni and K.H. Norian, 86.