

Dr. ILIJA JEGDIC
Assistant Professor
Department of Mathematics
Texas Southern University

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EDUCATION:

Ph.D. in Mathematics, University of Houston May 2014
Thesis: *Large Time Step and Overlapping Grids for Conservation Laws* Advisor: Dr. Richard Sanders
Developed and analyzed numerical methods for systems of differential equations
Created and implemented my own software using C, TCL/TK and OpenGL

M.S. in Mathematics, University of Houston December 2013

M.S. in Applied Mathematics, University of Novi Sad, Serbia July 2008
Thesis: *Optimal Cutting* Advisor: Dr. Marko Nedeljkov
Invented strategies for cutting of circles and rectangles from a rectangular board
Proved that those strategies are optimal
Designed and implemented my own software using Mathematica

B.Sc. in Mathematics, University of Novi Sad, Serbia October 2006

RESEARCH INTERESTS:

Partial Differential Equations, Numerical Analysis, Applied Mathematics, Computational Mathematics, Fluid and Gas Dynamics, Computational Biomedicine, Approximation Theory

WORK EXPERIENCE:

Assistant Professor

Department of Mathematics, Texas Southern University, Houston, TX

August 2016 – present

Teaching various undergraduate mathematics courses

Working on research in Numerical Analysis and Approximation Theory

Conducting service to the department, university and community

Postdoc/Lecturer

Applied Mathematics, School of Natural Sciences, University of California Merced, CA

Aug 2015 – August 2016

Taught Introduction to Matlab

Worked on exponential integrators that are used to solve large stiff systems of ordinary diff. equations

Worked on preparing a program package Epic for public use; Epic represents a library of EpiRK methods, exponential propagation integrators Runge-Kutta methods, written for MatLab and C++, where C++ version contains an MPI implementation for parallel computing

Adjunct Instructor

Department of Mathematics and Physics, Houston Baptist University, Houston, TX

Aug 2014 – May 2015

Taught College Algebra; duties included lecturing, creating and grading assignments and exams

Used technology and MyMathLab

Adjunct Instructor

Department of Mathematics and Statistics, University of Houston – Downtown, Houston, TX

Jan 2015 – May 2015

Taught fully online course (Business Statistics) during a mini-session of three weeks; used Blackboard Learn

Tutored variety of mathematics and statistics courses from Beginning Algebra to advanced Calculus topics

Adjunct Instructor**Mathematics Department, Lone Star College – CyFair, Houston, TX**

Aug 2014 – Dec 2014

Taught College Algebra and Trigonometry; duties included lecturing, creating and grading assignments

Used technology and MyMathLab

Teaching Assistant**Department of Mathematics, University of Houston, Houston, TX**

Aug 2008 – May 2014

Taught Calculus I, II and III, assisted faculty in creating and grading assignments, initiated and led students' discussions, motivated several students to take upper level mathematics courses

Graded assignments for various junior and senior undergraduate courses, and graduate courses

Tutored 4 hours/week almost every semester at the mathematics lab

Research Intern at Computational Biomedicine Lab**Department of Computer Science, University of Houston, Houston, TX**

Summer 2009

Collaborated with a team of researchers on developing codes for problems in image analysis using MATLAB

Implemented a code which analyzed a series of CT scans of human body, extracted the part with the heart and produced a 3D model of the heart

Teaching Assistant**Institute of Mathematics and Informatics, University of Novi Sad, Serbia**

Jan 2007 – July 2008

Conducted recitations for Complex Analysis and Numerical Analysis, created and graded assignments

Used technology and Mathematica while teaching

Research Student at the REU (Research Experience for Undergraduates) Program**Department of Mathematics, University of Illinois at Urbana-Champaign, IL**

Summer 2003

Analyzed time-dependent connections between objects identified as “friends”, “enemies” or “neutral” using a “friend-of-a-friend” rule and Markov chains

Developed computer simulations using Mathematica

PUBLICATIONS:I. Jegdic, *Optimal Cutting*, M.S. thesis (in Serbian), University of Novi Sad (2008)I. Jegdic, *Large time step and overlapping grids for conservation laws*, Ph.D. thesis, University of Houston (2014)I. Jegdic, K. Jegdic, *Remarks on diverging rarefaction waves interactions for the nonlinear wave system*, Journal of Coupled Systems and Multiscale Dynamics, Vol 3(1), 87-93 (2015)I. Jegdic, K. Jegdic, *Properties of solutions to semi-hyperbolic patches for the unsteady transonic small disturbance equations*, Electronic Journal of Differential Equations, Vol 2015, No 243, 1-20 (2015)I. Jegdic, J. Larson, P. Simeonov, *Algorithms and identities for (q,h) -Bernstein polynomials and (q,h) -Bezier curves*, Analysis in Theory and Applications, 32, 373-386 (2016)I. Jegdic, K. Jegdic, *Interacting rarefaction waves for the unsteady transonic small disturbance equation*, Electronic Journal of Differential Equations, Vol 2016, No 248, 1-15 (2016)I. Jegdic, *Algorithms and identities for bivariate (h_1, h_2) -blossoming*, International Journal of Applied Mathematics, Vol 30, No 4, 321-344 (2017)I. Jegdic, *A subdivision algorithm for h -Bezier volumes using trivariate h -blossoming*, submittedI. Jegdic, *Numerical study of singular and delta shock solutions using a large time step method*, submittedI. Jegdic, R. Sanders, *Large time step for multidimensional conservation laws*, preprintI. Jegdic, P. Simeonov, V. Zafiris, *Algorithms and identities for (q,h) -Bezier surfaces based on bivariate (q,h) -blossoming*, in preparation

GRANTS AND AWARDS:

PIC Math Grant from Mathematica Association of America	Spring 2019
Travel Support from Organizers of HYP2018 Conference	June 2018
SEED GRANT from Texas Southern University "Applications of large time step and overlapping grids methods to secondary oil recovery and gas dynamics"	November 2017-present
SIAM (Society for Industrial and Applied Mathematics) Travel Grant Funded to give an oral presentation at the 2014 SIAM Annual Meeting in Chicago, IL	July 2014
AMS (American Mathematical Society) Travel Grant Funded to give an oral presentation at the AMS Spring Central Sectional Meeting in Lubbock, TX	April 2014

CONFERENCES ATTENDED AND SEMINAR PRESENTATIONS:

University of Houston Downtown, Houston, TX,	April 2018
3rd Annual Meeting of SIAM Central States Sections, Colorado State University Presentation: Large Time Step Method For Conservation Laws	October 2017
AMS Fall Central Sectional Meeting, University of North Texas, Denton, TX Co-organizer of the Special Session on Recent Progress on Hyperbolic Conservation Laws	September 2017
AMS Spring Eastern Sectional Meeting, Hunter College, New York, NY Presentation: Overlapping grids for conservation laws	May 2017
University of Washington, Seattle, WA Biomedical Image Computing Group Seminar Presentation: Large time step and overlapping grids for conservation laws	July 2015
University of California Merced, CA Presentation: Large time step and overlapping grids for conservation laws	July 2015
Texas PDE Conference 2015, University of Houston, Houston, TX	March 2015
2015 Joint Mathematics Meetings, San Antonio, TX Presentation: Overlapping grids methods for conservation laws	January 2015
2014 SIAM Annual Meeting, Chicago, IL Presentation: Analysis of a Large Time Step and Overlapping Grids Method for Hyperbolic Conservation Laws	July 2014
AMS Spring Central Sectional Meeting, Texas Tech University, Lubbock, TX Presentation: Analysis of a Large Time Step Method for Hyperbolic Conservation Laws	April 2014
Texas PDE Conference 2014, University of North Texas, Denton, TX	March 2014

SPECIAL CLASS PROJECTS AND PRESENTATIONS:

University of Novi Sad, Serbia

Project title:

Modeling of Traffic Control (summer 2007) – given the data, the goal was to model a bus route and to implement it in Mathematica

White Noise (spring 2006) – presentation for the course in Stochastics

Shock Waves and Viscosity Method (spring 2006) – theoretical study of formation of traffic jams

Plotting functions from cell in Mathematica (spring 2003) – the main goal was construction of a pallet which will read a given function from a given cell and then plot its graph into a given cell

Construction of Sierpinsky Sponge using Pyramids in Mathematica (fall 2002)

Summer school at Research Center "Petnica", Valjevo, Serbia

Project title: Overview of number theory by Euler (summer 1999)

COURSES TAUGHT:

Texas Southern University (Fall 2016 – present)

Calculus I, Calculus II, PreCalculus, Trigonometry, Mathematics for Business and Economic Analysis I,

Mathematics for Business and Economic Analysis II

University of California Merced (Fall 2015 – Summer 2016)

Introduction to Matlab

University of Houston – Downtown (May 2015)

Statistics for Business Applications – fully online course

Houston Baptist University (Fall 2014 – Spring 2015)

College Algebra

Lone Star College – CyFair (Fall 2014)

College Algebra, Trigonometry

University of Houston (Fall 2008 – Spring 2014)

Calculus I, Calculus II, Calculus III

University of Novi Sad (Spring 2008 – Summer 2008)

Complex Analysis, Numerical Analysis

COMPUTER SKILLS AND CERTIFICATES:

Mathematica (Wolfram Certificate 2009), Matlab, Fortran, C/C++, Python, TCL/TK, OpenGL, MPI, GNUplot, Unix, Windows, MS Office and its Unix equivalents

SERVICE TO THE PROFESSION:

Reviewer for McGraw Hill Education (Summer 2018 - present)

Reviewer for Mathematical Reviews (Summer 2018 - present)

Serving as a Judge at the 59th Annual Science and Engineering Fair of Houston (Spring 2018)

Reviewer for Journal of Computational and Applied Mathematics (Spring 2018 - present)

Reviewer for Journal of Advanced Mathematics (Spring 2018 - present)

Reviewer for Mathematical Methods in the Applied Sciences (Fall 2017 - present)

Supervising a student project for Honors College (Spring 2017)

Co-organizer of the Special Session on Recent Progress on Hyperbolic Conservation Laws at the AMS Fall Sectional Meeting, University of North Texas, Denton, TX (September 2017)

Served on *Assessment Committee* and *Curriculum Committee* at Texas Southern University (since Fall 2016), Hiring Comity (Spring 2017 - present)

Reviewer for International Journal of Engineering and Mathematical Modeling (Spring 2015 – present)

Volunteering to hold review sessions for all students enrolled in the course “Advanced Linear Algebra” on Fridays afternoon at the University of Houston (Spring 2013)

Distributing and inputting in the data system manually student evaluations for undergraduate mathematics courses at the University of Novi Sad (January 2007 – July 2008)