



Prof Vassili Toropov

PhD, FRAeS, AFAIAA, CEng

School of Engineering and Materials Science Queen Mary University of London Mile End Road London E1 4NS

tel: +44 (0)20 7882 6296 email: v.v.toropov@qmul.ac.uk web: www.sems.qmul.ac.uk/v.v.toropov

2022

Wing jig shape optimisation with gradient-assisted metamodel building in a trust-region optimisation framework.

Zhang Y, Jia D, Bontoft EK and Toropov V. Structural and Multidisciplinary Optimization vol. 65, (12). Springer Nature.

2020

Adaptive Global Optimization Using Graphics Accelerators. Barkalov K, Lebedev I and Toropov V. *Supercomputing 150-161. Springer Nature*.

2018

Multi-Disciplinary Design Optimisation of the Cooled Squealer Tip for High Pressure Turbines.

Caloni S, Shahpar S and Toropov VV. Aerospace vol. 5, (4). Mdpi.

HPC Implementation of the Multipoint Approximation Method for Large Scale Design Optimization Problems Under Uncertainty.

Toropov V, Korolev Y, Barkalov K, Kozinov E and Gergel V. *Engopt 2018 Proceedings of The 6th International Conference On Engineering Optimization 296-306. Springer Nature.*

2017

Multidisciplinary Optimisation of an Automotive Body-in-White Structure Using Crushable Frame Springs and Sub Space Metamodels in Trust-Regions.

Mortished C, Ollar J, Benzie P, Jones R, Sienz J and Toropov V. Advances in Structural and Multidisciplinary Optimization 1572-1584. Springer Nature.

Gradient based hyper-parameter optimisation for well conditioned kriging metamodels. Ollar J, Mortished C, Jones R, Sienz J and Toropov V. *Structural and Multidisciplinary Optimization vol. 55, (6)* 2029-2044.

Aerodynamic CFD Based Optimization of Police Car Using Bezier Curves. Taherkhani AR, Gilkeson C, Gaskell P, Hewson R, Toropov V, Rezaienia A and Thompson H. Sae International

Journal of Materials and Manufacturing vol. 10, (2).

ERRATA: Aerodynamic CFD Based Optimization of Police Car Using Bezier Curves.

Taherkhani AR, Gilkeson CA, Gaskell P, Hewson RW, Toropov V, Rezaienia A and Thompson H. Sae International Journal of Materials and Manufacturing vol. 11, (2) 161-161.Sae International.

Optimum Design of Composite Concrete Floors Using a Hybrid Genetic Algorithm.

Sahab MG, Toropov VV and Gandomi AH. Handbook of Neural Computation 581-589.

Sub-space approximations for MDO problems with disparate disciplinary variable dependence.

Ollar J, Toropov V and Jones R. Structural and Multidisciplinary Optimization vol. 55, (1) 279-288.

Chapter 31 Optimum Design of Composite Concrete Floors Using a Hybrid Genetic Algorithm.

Sahab MG, Toropov VV and Gandomi AH. Handbook of Neural Computation 581-589. Elsevier.

2016

Detailed design of a lattice composite fuselage structure by a mixed optimization method.

Liu D, Lohse-Busch H, Toropov V, Hhne C and Armani U. Engineering Optimization vol. 48, (10) 1707-1720.

A multiscale method for optimising surface topography in elastohydrodynamic lubrication (EHL) using metamodels.

de Boer GN, Gao L, Hewson RW, Thompson HM, Raske N and Toropov VV. *Structural and Multidisciplinary Optimization vol.* 54, (3) 483-497.

Implementation of Discrete Capability into the Enhanced Multipoint Approximation Method for Solving Mixed Integer-Continuous Optimization Problems.

Liu D and Toropov V. International Journal For Computational Methods in Engineering Science and Mechanics vol. 17, (1) 22-35. Taylor & Francis.

2015

Application of structural topology optimisation to perforated steel beams.

Tsavdaridis KD, Kingman JJ and Toropov VV. Computers & Structures vol. 158, 108-123. Elsevier.

The use of glycerol and cooking oil in masonry unit production.

Vu HM, Forth JP and Toropov VV. *Proceedings of The Institution of Civil Engineers - Construction Materials vol. 170, (2) 1-14.Ice Publishing.*

Weight and mechanical performance optimization of blended composite wing panels using lamination parameters.

Liu D, Toropov VV, Barton DC and Querin OM. *Structural and Multidisciplinary Optimization vol.* 52, (3) 549-562. *Springer Nature.*

Energy thermal management in commercial bread-baking using a multi-objective optimisation framework. Khatir Z, Taherkhani AR, Paton J, Thompson H, Kapur N and Toropov V. *Applied Thermal Engineering vol. 80, 141-149.Elsevier.*

Metamodels for Composite Lattice Fuselage Design.

Liu D, Zhou X and Toropov V. International Journal of Materials Mechanics and Manufacturing vol. 4, (3) 175-178. *Ejournal Publishing*.

2014

Dynamic response of typical section using variable-fidelity fluid dynamics and gust-modeling approaches - With correction methods.

Berci M, Mascetti S, Incognito A, Gaskell PH and Toropov VV. Journal of Aerospace Engineering vol. 27, (5).

Multidisciplinary multifidelity optimisation of a flexible wing aerofoil with reference to a small UAV.

Berci M, Toropov VV, Hewson RW and Gaskell PH. *Structural and Multidisciplinary Optimization vol.* 50, (4) 683-699. *Springer Nature*.

Dealing with numerical noise in CFD-based design optimization.

Gilkeson CA, Toropov VV, Thompson HM, Wilson MCT, Foxley NA and Gaskell PH. *Computers and Fluids vol. 94*, 84-97.

The use of optimisation for enhancing the development of a novel sustainable masonry unit.

Vu HM, Forth JP, Dao DV and Toropov VV. Applied Mathematical Modelling vol. 38, (3) 853-863.

Metamodeling in multidisciplinary design optimization: How far have we really come?.

Viana FAC, Simpson TW, Balabanov V and Toropov V. Aiaa Journal vol. 52, (4) 670-690.

Stiffness improvement of stamping die by means of topology optimization.

Hamasaki H, Nakazono M, Hino R, Yoshida F, Manabe H, Kondo H and Toropov VV. Advanced Materials Research vol. 939, 266-273.

Two-scale EHL: Three-dimensional topography in tilted-pad bearings.

De Boer GN, Hewson RW, Thompson HM, Gao L and Toropov VV. Tribology International vol. 79, 111-125.

2013

Multi-objective aerodynamic shape optimization of small livestock trailers.

Gilkeson CA, Toropov VV, Thompson HM, Wilson MCT, Foxley NA and Gaskell PH. *Engineering Optimization vol.* 45, (11) 1309-1330.

Multi-objective Computational Fluid Dynamics (CFD) design optimisation in commercial bread-baking. Khatir Z, Thompson H, Kapur N, Toropov V and Paton J. *Applied Thermal Engineering vol. 60, (1-2) 480-486.*

A lamination parameter-based strategy for solving an integer-continuous problem arising in composite optimization.

Liu D and Toropov VV. Computers and Structures vol. 128, 170-174.

A Review on Traditional and Modern Structural Optimization: Problems and Techniques.

Sahab MG, Toropov VV and Gandomi AH. Metaheuristic Applications in Structures and Infrastructures 25-47.

Thermal energy management in the bread baking industry using a system modelling approach. Paton J, Khatir Z, Thompson H, Kapur N and Toropov V. *Applied Thermal Engineering vol. 53, (2) 340-347.*

A semi-analytical model for the combined aeroelastic behaviour and gust response of a flexible aerofoil. Berci M, Gaskell PH, Hewson RW and Toropov VV. *Journal of Fluids and Structures vol. 38, 3-21*.

Optimisation of the energy efficiency of bread-baking ovens using a combined experimental and computational approach.

Khatir Z, Paton J, Thompson H, Kapur N and Toropov V. Applied Energy vol. 112, 918-927.

The use of optimisation for enhancing the development of a novel sustainable masonry unit. Vu HM, Forth JP, Dao DV and Toropov VV. *Applied Mathematical Modelling*.

The use of topology optimisation in the conceptual design of next generation lattice composite aircraft fuselage structures.

Niemann S, Kolesnikov B, Lohse-Busch H, Hhne C, Querin OM, Toropov VV and Liu D. Aeronautical Journal vol. 117, (1197) 1139-1154.

2 A Review on Traditional and Modern Structural Optimization Problems and Techniques. Sahab MG, Toropov VV and Gandomi AH. *Metaheuristic Applications in Structures and Infrastructures 25-47. Elsevier.*

2012

Thermal energy management in the bread baking industry using a system modelling approach. Paton J, Khatir Z, Thompson H, Kapur N and Toropov V. *Applied Thermal Engineering*.

Design optimization of supersonic jet pumps using high fidelity flow analysis.

Eves J, Toropov VV, Thompson HM, Kapur N, Fan J, Copley D and Mincher A. *Structural and Multidisciplinary Optimization vol.* 45, (5) 739-745.

Mid-range metamodel assembly building based on linear regression for large scale optimization problems. Polynkin A and Toropov VV. *Structural and Multidisciplinary Optimization vol. 45, (4) 515-527.*

Development of a numerical optimization approach to ventilation system design to control airborne contaminant dispersion and occupant comfort.

Khan MAI, Noakes CJ and Toropov VV. Building Simulation vol. 5, (1) 39-50.

Computational fluid dynamics (CFD) investigation of air flow and temperature distribution in a small scale bread-baking oven.

Khatir Z, Paton J, Thompson H, Kapur N, Toropov V, Lawes M and Kirk D. Applied Energy vol. 89, (1) 89-96.

2011

Multifidelity metamodel building as a route to aeroelastic optimization of flexible wings.

Berci M, Gaskell PH, Hewson RW and Toropov VV. Proceedings of The Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science vol. 225, (9) 2115-2137.

Computational fluid dynamic analysis and design optimization of jet pumps.

Fan J, Eves J, Thompson HM, Toropov VV, Kapur N, Copley D and Mincher A. *Computers and Fluids vol.* 46, (1) 212-217.

A neuro-fuzzy approach to the weight estimation of aircraft structural components.

Hannon C, Querin OM and Toropov VV. Aeronautical Journal vol. 115, (1174) 739-748.

Bilevel optimization of blended composite wing panels.

Liu D, Toropov VV, Querin OM and Barton DC. Journal of Aircraft vol. 48, (1) 107-118.

2010

Applications of GA and GP to Industrial Design Optimization and Inverse Problems.

Toropov VV, Alvarez LF and Querin OM. Advances of Soft Computing in Engineering 133-189. Springer Nature.

2009

Reliable tension leveling process design using stochastic optimization.

Hamasaki H, Shigaki M, Yoshida F and Toropov V. Tetsu-to-Hagane/Journal of The Iron and Steel Institute of Japan vol. 95, (11) 740-746.

Metamodel-based collaborative optimization framework.

Zadeh PM, Toropov VV and Wood AS. Structural and Multidisciplinary Optimization vol. 38, (2) 103-115.

2008

Numerical optimization of sheet metal forming process using new fracture criterion. Hirahara A, Hino R, Yoshida F and Toropov VV. *International Journal of Modern Physics B vol. 22, (31-32) 5692-5698.*

A new algorithm for reduction of number of press-forming stages in forging processes using numerical optimization and FE simulation.

Hino R, Sasaki A, Yoshida F and Toropov VV. International Journal of Mechanical Sciences vol. 50, (5) 974-983.

2007

Simultaneous model building and validation with uniform designs of experiments. Narayanan A, Toropov VV, Wood AS and Campean IF. *Engineering Optimization vol. 39, (5) 497-512.*

Reduction of stages in multi-stage metal forming process based on numerical optimization in conjunction with FE simulation.

Hino R, Sasaki A, Yoshida F and Toropov VV. Key Engineering Materials vol. 340-341 I, 767-772.

2006

Optimum blank design for sheet metal forming based on the interaction of high- and low-fidelity FE models. Hino R, Yoshida F and Toropov VV. *Archive of Applied Mechanics vol.* 75, (10-12) 679-691.

2005

A hybrid genetic algorithm for reinforced concrete flat slab buildings. Sahab MG, Ashour AF and Toropov VV. *Computers and Structures vol.* 83, (8-9) 551-559.

Cost optimisation of reinforced concrete flat slab buildings.

Sahab MG, Ashour AF and Toropov VV. Engineering Structures vol. 27, (3) 313-322.

Application of Advanced Optimization Techniques to Parameter and Damage Identification Problems.

Toropov V and Yoshida F. Parameter Identification of Materials and Structures 177-263. Springer Nature.

2003

Empirical modelling of shear strength of RC deep beams by genetic programming.

Ashour AF, Alvarez LF and Toropov VV. Computers and Structures vol. 81, (5) 331-338.

Inverse approach to identification of material parameters of cyclic elasto-plasticity for component layers of a bimetallic sheet.

Yoshida F, Urabe M, Hino R and Toropov VV. International Journal of Plasticity vol. 19, (12 SPEC ISS.) 2149-2170.

2002

Identification of material parameters for component layers of clad sheet metal by elasto-plastic inverse approach.

Yoshida F, Urabe M, Hino R and Toropov VV. *Nippon Kikai Gakkai Ronbunshu, a Hen/Transactions of The Japan Society of Mechanical Engineers, Part A vol.* 68, (5) 766-771.

2001

Design optimization of structural steelwork using a genetic algorithm, FEM and a system of design rules. Toropov VV and Mahfouz SY. *Engineering Computations (Swansea, Wales) vol. 18, (3-4) 437-459.*

1999

Identification of parameters for air permeability of shotcrete tunnel lining using a genetic algorithm. Javadi AA, Farmani R, Toropov VV and Snee CPM. *Computers and Geotechnics vol. 25, (1) 1-24.*

1998

Optimization of mechanisms using direct differentiation and a multipoint approximation method. Markine VL, Meijaard JP, Meijers P and Toropov VV. *Engineering Optimization vol. 31, (2) 141-160.*

Identification of material parameters in constitutive models of cyclic plasticity from bending tests of sheet metals.

Toropov VV, Urabe M, Okada T and Yoshida F. Nihon Kikai Gakkai Ronbunshu, a Hen/Transactions of The Japan Society of Mechanical Engineers, Part A vol. 64, (619) 737-757.

Identification of material parameters in constitutive model for sheet metals from cyclic bending tests. Yoshida F, Urabe M and Toropov VV. *International Journal of Mechanical Sciences vol. 40, (2-3) 237-249.*

1997

Shape optimization with adaptive mesh refinement: Target error selection strategies. Van Keulen F, Polynkine AA and Toropov VV. *Engineering Optimization vol.* 28, (1-2) 95-125.

New developments in structural optimization using adaptive mesh refinement and multipoint approximations. Van Keulen F and Toropov VV. *Engineering Optimization vol.* 29, (1-4) 217-234.

1996

Optimization of geometrically non-linear structures based on a multi-point approximation method and adaptivity.

Polynkine AA, Van Keulen F and Toropov VV. Engineering Computations (Swansea, Wales) vol. 13, (2-4) 76-97.

Multilevel optimization of the dynamic behaviour of a linear mechanical system with multipoint approximation.

Markine VL, Meijers P, Meijaard JP and Toropov VV. Engineering Optimization vol. 25, (4) 295-307.

1995

Optimization of geometrically nonlinear thin-walled structures using the multipoint approximation method. Polynkin AA, van Keulen F and Toropov VV. *Structural Optimization vol. 9, (2) 105-116.*

1993

Multiparameter structural optimization using FEM and multipoint explicit approximations. Toropov VV, Filatov AA and Polynkin AA. *Structural Optimization vol. 6, (1) 7-14.*

1989

Simulation approach to structural optimization. Toropov VV. *Structural Optimization vol. 1, (1) 37-46.*