

Ioan-Liviu IGNAT (Matematica)

1. Andreu-Vaillo, Fuensanta; Mazón, José M.; Rossi, Julio D.; Toledo-Melero, J. Julián, Nonlocal diffusion problems. Mathematical Surveys and Monographs, 165. American Mathematical Society, Providence, RI; Real Sociedad Matemática Española, Madrid, 2010. xvi+256 pp. ISBN: 978-0-8218- 5230-9
2. Brezis, Haim, Functional analysis, Sobolev spaces and partial differential equations. Universitext. Springer, New York, 2011. xiv+599 pp. ISBN: 978-0-387-70913-0
3. Evans, Lawrence C. Partial differential equations. Second edition. Graduate Studies in Mathematics, 19. American Mathematical Society, Providence, RI, 2010. xxii+749 pp. ISBN: 978-0-8218-4974-3

Liana DAVID (Matematica)

Tematica:

- 1) Grupuri Lie, algebra Lie a unui grup Lie, aplicația exponențială, metrici bi-invariante;
- 2) Algebra liniară a lui $V + V^*$ (V spațiu vectorial) cu metrica standard de signature neutră: subspații maximale isotrope, B-transformări, forme pe V ca spinori;
- 3) Algebroidi Courant, exemple, enunțul teoremei de clasificare a algebroidelor Courant tranzitivi;
- 4) Structuri complexe generalizate pe varietăți diferențiabile, diverse caracterizări ale integrabilității, enunțul teoremei lui Darboux;
- 5) Conexiuni și metrici generalizate pe algebroidi Courant, conexiunea Levi-Civita în geometria generalizată, definiția curburii metricilor generalizate.

Bibliografie:

- V. Cortes, L. David: Generalized connections, spinors and integrability of generalized structures on Courant algebroids, Moscow Math Journal 21 (4), (2021), p 695-736;
- V. Cortes, L. David: T-duality for transitive Courant algebroids, J. Symplectic Geometry, 21 (2023), no 4, p. 775-856;
- M. Gualtieri: Generalized Complex Geometry, Ph.D thesis, Universitatea din Oxford 2003, arxiv:math/0401221;

B. O'Neil: Semi-Riemannian geometry. With applications to relativity, Pure and Applied Mathematics 103, New-York, 1983;

F. Warner: Foundations of Differentiable Manifolds and Lie groups, Grad. Texts in Math. 94 (1983);

Alexandru-Anton POPA (Matematica)

Tematica: Number theory

--Algebraic number theory

--Lie groups, Lie algebras and their representations

--Modular forms

Bibliografie

A. Frohlich, M.J. Taylor-Algebraic Number theory

N. Koblitz-Introduction to Elliptic Curves and Modular Forms

J. Humphreys-Introduction to Lie Algebras and Representation Theory

J.P. Serre-Local fields

D. Cox-Primes of the forms x^2+ny^2

Tudor BARBU (Informatica)

Tematica:

1. Algoritmi de recunoaștere a formelor și învățare automată [1-3]

2. Tehnici de programare a algoritmilor și structuri de date [4]

3. Rețele neuronale de învățare profundă (deep learning) [5, 6]

4. Procesarea și analiza imaginilor digitale [7, 8]

5. Indexarea și regăsirea imaginilor statice și video [9, 10]

6. Tehnici de autentificare biometrică [11, 12]

7. Analiza secvențelor video: segmentare temporală, estimarea mișcării [13, 14]

8. Viziune computerizată [15]

9. Teoria grafurilor cu aplicații [16]

10. Modele matematice aplicate în procesarea de imagini și viziunea computerizată [17-19].

Bibliografie:

1. C. Bishop, Pattern Recognition and Machine Learning, Springer, 2006.
2. R. O. Duda, P. E. Hart, D. G. Stork, Pattern classification (2nd edition), Wiley, NY, 2001.
3. K. Koutroumbas, S. Theodoridis, Pattern Recognition (4th ed.), Boston: Academic Press, 2008.
4. V. A. Alfred et al., Data structures and algorithms, USA: Addison-Wesley, 1983.
5. I. Goodfellow, Y. Bengio, A. Courville, Deep learning, MIT press, 2016.
6. L. Deng, D. Yu, Deep learning: methods and applications, Foundations and trends in signal processing, 7(3-4), pp. 197-387, 2014.
7. R. Gonzales, R. Woods, Digital Image Processing, Prentice Hall, New York, USA, 2nd edition, 2001
8. C. Vertan, Prelucrarea si analiza imaginilor, Editura Printech, Bucuresti, 1999.
9. J. C. Nordbotten, Multimedia Information Retrieval Systems, Web-book, 2008.
10. C. Vertan, M. Ciuc, Cautarea imaginilor prin similaritatea continutului: o introducere, Editura Printech Bucuresti, 2002.
11. A. K. Jain, A. Ross, K. Nandakumar, Introduction to biometrics, Springer Science & Business Media, 2011.
12. I. M. Alsaadi, Physiological biometric authentication systems, advantages disadvantages and future development: A review, Int J Sci Technol Res 12, pp. 285-289, 2015.
13. Y. Bendraou, Video Shot Boundary Detection and Key-Frame Extraction Using Mathematical Models, Image Processing; Université du Littoral Côte d'Opale: Dunkirk, France, 2017.
14. B. Pesquet-Popescu, M. Cagnazzo, F. Dufaux, Motion estimation techniques, TELECOM ParisTech, pp. 33-34, 2016.

15. L. Shapiro, G. Stockman, Computer Vision, pp Prentice-Hall, New Jersey, USA, 2001
16. J. A. Bondy, U. S. R. Murty, Graph Theory, Springer, 2008, ISBN 978-1-84628-969-9.
17. J. Weickert, Anisotropic Diffusion in Image Processing, European Consortium for Mathematics in Industry, B. G. Teubner, Stuttgart, Germany, 1998.
18. C. B. Schonlieb, Partial Differential Equation Methods for Image Inpainting, Volume 29, Cambridge University Press, 2015.
19. T. Barbu, Novel Diffusion-Based Models for Image Restoration and Interpolation, Series: Signals and Communication Technology, Springer International Publishing, 140 pages, 2019.

Ferucio-Laurentiu TIPLEA

Tematica:

Identity-based encryption, attribute-based encryption, searchable encryption
Cryptographic protocols
Cryptographic multi-linear maps
Post-quantum cryptography

Bibliography:

1. Daniele Micciancio: Lattices Algorithms and Applications, University of California, San Diego, 2021
2. Y. Katz, Y. Lindell: Introduction to Modern Cryptography, 3rd edition, CRC Press, 2021
3. D. Huang, Q. Dong, Y. Zhu: Attribute-Based Encryption and Access