

# Jeff Cromwell, PhD

## Publication Vitae and Technical Resume

December 1 2022

### Mathematical Learning Space Research

#### Portfolio

### Math Biology Music Programmer

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#### 1 Contact Information

Table 1 has the Current Contact Information

Contact	Information
City Residence	Bridgeville, PA 15017
Phone	send email
Email for Inquires	designofharmony@gmail.com
Social Networking on Instagram	mathmusicbiology
R, TeX Programs and PDFs	<a href="https://github.com/MathematicalLearningSpace">https://github.com/MathematicalLearningSpace</a>
Scientific Communication	<a href="http://mathlearningspace.weebly.com">mathlearningspace.weebly.com</a>
Professional Networking	<a href="https://www.linkedin.com/in/jeff-cromwellphd">https://www.linkedin.com/in/jeff-cromwellphd</a>
Music Compositions	<a href="http://musescore.com/sheet-music?text=mathnmusic">http://musescore.com/sheet-music?text=mathnmusic</a>

Table 1: Selected Contact Information for Scientific Communication, Inquires about Research Work and Consulting Opportunities

#### 2 Awards and Scholarships

1. Full tuition research assistantship, Regional Research Institute 1986

2. Qualifying PhD Exam in Econometrics-Pass with Distinction
3. Research Quality Award - Edinboro University of PA 1990
4. Wall Street Journal Achievement Award 1985
5. Burns Scholarship for Outstanding Achievement in Social Sciences 1985
6. Presidential Scholar 1985,1986

#### 3 Current Work: November/December 2022 Preprints

1. Cromwell, JB (2022). Recurrence Relations for Polynomial Approximations with Fractional Differential Equation Operators
2. Cromwell, JB (2022). Convex/Concave Grouping for Single, Double, Triple Symbolic Selection for Sequence Generation by Modulo Operators
3. Cromwell, JB (2022). A Differential Equation System of Ikaros Zinc Finger (IkZF) Family of Transcription Factors for Potential Antineoplastic Activity
4. Cromwell, JB (2022). Tumor Suppression with Immunomodulatory Drug Design Based on Ring Compositions

#### 4 Education

1. 2004 Ph.D. Natural Resource Economics- Emphasis: Nonlinear Time Series Analysis, Mineral Economics, Mathematical Economics and Chaos Theory West Virginia University
2. 1998 M.S. Agricultural Economics- Emphasis: Mathematical Statistics and Multinomial Models West Virginia University
3. 1986 B.A. Economics- Emphasis: Mathematics and Philosophy of Science California University of PA

#### 5 Summary .NET Experience

Over 30 years of programming experience with (a) presentation (b) middleware and (c) database layers in primarily SQL, CSharp, C++, R Statistical Language, HTML, Java, Javascript, XML, LINQ and WPF languages with additional work in CUDA and ESRI GIS Arcobjects. Translation of software design patterns, scientific formula and algorithm with table design with optimization and automation- a focus of many consulting assignments over the years. As a working manager in department also responsible for many .NET/SQL Server apps and team members in the design, implementation and maintenance of internet and intranet work. Enjoy both the nurturing of teams and the working on software in my speciality of algorithmic transformations of research materials into computer languages and tech stacks as demonstrated by my continued scientific work in mathematical biology and financial econometrics.

My current interest is in Quantum computing with .NET products and Amazon and Azure cloud based services as an API for both R and CSharp.

## 6 R Packages of Books and Articles in Review

These packages are used to develop my articles and books (new releases) with some of available to the public on github.

1. The Math Biology Music Learning Space Shiny Dashboard
2. FriendInMusic2022Two
3. FinEcon2022One
4. MathOncology2022One
5. PapersOncology2022Vol1One
6. PapersOncology2022Vol2One
7. CNCBook2022One
8. LymphomaResearch2022One
9. AestheticLifestyleLearning2022One
10. LymphomaTreatment2022One
11. QWalks

## 7 Books and Proposals

1. Cromwell, JB, WC Labys and M. Terraza Univariate Tests for Time Series Models (Quantitative Applications in the Social Sciences)
2. Cromwell, JB, MJ Hannan, WC Labys and M. Terraza Multivariate Tests for Time Series Models (Quantitative Applications in the Social Sciences)
3. Cromwell JB (In Review) Collected Papers in Mathematical Oncology Series : Mathematical Models and Theorems for Epithelial Cell Cycle Dynamics and Repair First Edition Volume 1
4. Cromwell JB (In Review) Collected Papers in Mathematical Oncology Series : Ethnopharmacological Mathematical Structures for Botanical Treatment of Helicobacter Pylori with Gastric Carcinoma First Edition Volume 2
5. Cromwell JB (In Review) A Collection of Algorithms in the R Statistical and C Language in the Field of Mathematical Oncology Volume 1
6. Cromwell JB (In Review) Music and Mathematics: A Collection of Essays from A Number Theory Notebook Vol 1
7. Cromwell JB (In Review) Financial Econometrics in the R Language for Pharamceuticals: A Notebook of Articles for the Classroom Volume 1
8. Cromwell JB (In Review) A Collection of Math Biology Propositions and Proofs for Math Classroom Notebook Volume 1
9. Cromwell JB (In Review) A Compendium of Mathematical Models for Germinal-Center Diffuse Large B Cell Lymphoma Volume 1
10. Cromwell, JB (GitHub) Aesthetic Lifestyle Learning
11. Cromwell, JB (GitHub) Lymphoma Treatment 2022
12. Cromwell, JB (2022) The Starlight on Rice Mountain
13. Cromwell, JB (2022) The RGBA Winds of Neptune

14. Cromwell, JB (2022) A Book House Near Water
15. Cromwell, JB (2022) The Starshade Dancer in the Park
16. Cromwell, JB (2022) A Visit to the Art Center

## 8 Research Titles for January - December 2022

1. Cromwell JB (2022). Molecular Properties of the M-phase Inducer Phosphatase 1 for Chemical Carcinogenesis - Receptor Activation
2. Cromwell JB (2022). Molecular Properties of 3-hydroxy-3-methylglutaryl CoA synthetase Coexpression in Terpenoid Backbone Biosynthesis
3. Cromwell JB (2022). Crystal Structure and Molecular Properties of Lycopene Similarities for Ionizing Radiation Protection
4. Cromwell JB (2022). IL-12 Experimental Coexpression Signals and Crystal Variations In Dendritic Cellular Communication
5. Cromwell JB (2022). Molecular and Distributional Properties of Tanimoto Similarities for Hypoxia-inducible Factor Prolyl Hydroxylase Inhibitors
6. Cromwell JB (2022). Species Diversity of Thylakoid Proteins for Eudicots and Monocots with Photosynthesis and Chemical Carcinogenesis NADPH
7. Cromwell JB (2022). Distribution Identification of Lycopene Similarities with Atomic Polarizabilities and Complexity in Carotenoid Biosynthesis
8. Cromwell JB (2022). The Shiny Math Learning Space Research Portfolio Reader (SMLSRPR): A Subscription Model for Biomedical Widget Distribution
9. Cromwell JB (2022). Book of the Day: Digital Technology for a Academician Production Function for the University Classroom
10. Cromwell JB (2022). Modelling Persistence and Half-Life in the eGARCH model with a VaR Backtest for Correct Exceedances and Independence of Failures
11. Cromwell JB (2022). Smoothstep Polynomial Activations for Prediction of Future Temporal Directional Change in Financial Markets
12. Cromwell JB (2022). Algorithmic Improvements in Efficiency for Extreme Learning Machines
13. Cromwell JB (2022). Planar Set Distributions and the Lewis-Aboav-Weaire Law for Delaunay Triangulations in Epithelial Tissue
14. Cromwell JB (2022). Math and Music: Harmonic Measures in the Sinusoidal Spectrotemporal Ripples in Temporal Receptive Fields for Auditory Visualizations
15. Cromwell JB (2022).World Cancer Research Day 2022: A Note on Leucine Rich Repeat Proteins in a Coexpression Network
16. Cromwell JB (2022). QWalks: A New R Package for Graph-Associated Time Series Walk Modeling and Prediction for Quantum Biology Computing
17. Cromwell JB (2022). A QWalk Together in a Quantum Simulator

## 9 Math Notes Series January to December 2021

1. Cromwell, JB (2021). Working Paper Illustrated Numerical Reviews: DNA Repair
2. Cromwell, JB (2021). Working Paper Illustrated Numerical Reviews: Nonlinear Time Series Models
3. Cromwell, JB (2021). Generalized Beta Type 2 Distribution for Lissajous Curve Heat Maps
4. Cromwell, JB (2021). Kurtosis Categorification for Stock Price and Volume Changes: CALA, RDUS and XBIT
5. Cromwell, JB (2021). Functional Relationships in the Correlation Structure for Polar Area, Complexity and H Bond Acceptor Count from Tanimoto Similarity of Antibiotic Protein Synthesis Inhibitors
6. Cromwell, JB (2021). Stable Location Parameters and Pairwise Stability Identification for Electrostatic Surface
7. Cromwell, JB (2021). Potentials in Calreticulin Diversity
8. Cromwell, JB (2021). Third Moment Relationships in Beny Cinnamate and Puromycin Diversity
9. Cromwell, JB (2021). Pharmaceutical Stock Analyzer A Single Page Application for Both Rule Discovery and Prototyping Based on Waiting Time Distributions
10. Cromwell, JB (2021). Gene Expression Analyzer: A Single Page Application for Gene Expression Modeling for Gastric Cancer
11. Cromwell, JB (2021). The Damerau Levenshtein Metric for String Magnitude Organization for Graphic Design Surfaces
12. Cromwell, JB (2021). Music Motif Designer: A Single Page Application for 5 Track 15 Minute Album Designs
13. Cromwell, JB (2021). Music Motif Designer: Chord Designs for Musical Compositions
14. Cromwell, JB (2021). Osculating Parabolas and Conics in Boundary Conditions for Q-Derivatives
15. Cromwell, JB (2021). A Comparison of Symbolic and Numeric Fractional Differential Equation System Algorithms for Cancer Genomics
16. Cromwell, JB (2021). Two Dimensional Integer Parametric Relationships from Permutation Distribution Clustering and 3rd Order Difference Equation
17. Cromwell, JB (2021). Periodicity of 7 in Modulo and 4th Order Recursion Relationships for Probability Distributions
18. Cromwell, JB (2021). A Comparison of Fixed Integer Coefficient Difference Equations for Search Optimization of One Dimensional Polynomials
19. Cromwell, JB (2021). Pairing Vocabularies and the Design of Mathematical Sentences in Natural Languages
20. Cromwell, JB (2021). A Review of Vocabularies for a Subset of the Gastric Cancer Literature for Years 2020-2021

## 10 Preprints January to December 2021

In the Process of Collaboration and Academic Review for Journal Publication or Preprint Archive

1. Cromwell JB (2021) Stability Theorems for State Changes in Expression Levels with Protein Stress for HSPA4 HSP90AA1 and HSP90AB1 in STIP1 CCT8 and CCT5 Protein to Protein Interaction in Mathematical Oncology Applications
2. Cromwell JB (2021) Stability Theorems for CDX2 Models of Coexpression in the VDR BMP4 LEP ASCL2 EOMES Network
3. Cromwell JB (2021) A Mathematical Oncological Model of Overexpression Levels of TERT with interaction of PIF1 DKC1 NOP10 PINX1 MYC for telomerase activity
4. Cromwell JB (2021) Mutations in TP53 with interaction in the BAX BID PRDX1 CASP8 BCL212 Network for Stability Co-expression Analysis
5. Cromwell JB (2021) The MUC1 CCDCL15 EGFR ATP6VOA2 FHL2 CDH1 Network Model with Co-expression Binding
6. Cromwell JB (2021) A Mathematical Oncology Model for Expression Level Changes with Methylation of MLH1 in the PMS2 PMS1 MSH3 EXO1 BLM Co-expression Network
7. Cromwell JB (2021) A Delayed Differential Equation Model with Stability Expression Levels in TP53 Mutations with CREBBP HIST1H3A FOXO3 RXRA RXRB Network in Mathematical Oncology
8. Cromwell JB (2021) A Mathematical Model of Stability Changes in Expression Levels for TM9SF2 RPN2 SLC25A3 HSP90B1 DDOST ATP5A1 Network in Mathematical Oncology
9. Cromwell JB (2021) Stability Changes in Expression Levels with GBR2 EGFR CBL PIK3R2 SHC1 SOS1 in Mathematical Oncology
10. Cromwell JB (2021) Cell Surface Ligand Binding and Autophosphorylation with MET Amplification in the INPPL INSRR PTPN1 INSR EGFR network in Mathematical Oncology Models
11. Cromwell JB (2021) Spectral Radius Distributional Convergence and Moment Classification of Chemical Graphs For Cancer Research
12. Cromwell JB (2021) A Mathematical Model of Bond Angle Distributions of Binding Site Potential for DNA To Protein Interaction Networks
13. Cromwell JB (2021) A Mathematical Letter on Contour Mapping for Virus Protein Modal Dynamics
14. Cromwell JB (2021) Displacements Along Modal Trajectories for the AP2B1 Protein Coexpression Network for Vesicular Transport In the Internal Absorption of Viral Behavior
15. Cromwell JB (2021) A Modal Analysis of Secondary Properties and Subsequence Classification of Coexpression Networks of an Apolipoprotein for Retinol Binding
16. Cromwell JB (2021) A Brief Mathematical note on Retinoid Metabolism Networks with Beta-apo-carotenoids and CRBP CRABP FABP5 Cellular Retinoid Binding-proteins
17. Cromwell JB (2021) A Brief Mathematical note on mRNA Cancer and Virus Vaccines
18. Cromwell JB (2021) A Brief Mathematical Biology note Dipeptide Matrices from Maximum Likelihood Markovian Chains for Retinoid Binding-Proteins

19. Cromwell JB (2021) A Mathematical Letter on Constitutional QSAR Properties for Subsets of Compound Class A for Statistical Learning
20. Cromwell JB (2021) A Mathematical Biology Letter on Statistical Learning Change Point Algorithms with the Multilinear Tensor Decomposition Method for Chromosomal Molecular Models
21. Cromwell JB (2021) Variations on the Generalized Beta Distribution for Protein Coexpression Networks in Mathematical Oncology
22. Cromwell JB (2021) Transformations of a new Mathematical Constant for Piano Frequency Design an Classical Minuet Compositional Patterns
23. Cromwell JB (2021) A New Mathematical Constant and the Fibonacci Sequence Properties and Directions
24. Cromwell JB (2021) A New Mathematical Constant and Cubic Splines for Nonlinear Difference Polynomials
25. Cromwell JB (2021) A New Mathematical Constant with Continued Fraction Representation and Theorems
26. Cromwell JB (2021) Discriminant Polynomials and Differential Operators for Sylvester Matrix Based Classification of Protein Co-Expression in *Oryza sativa*
27. Cromwell JB (2021) Continued Fraction Representations of Variations on the Fransen–Robinson constant and Euler Number for Functional Differential Ratio Design
28. Cromwell JB (2021) Geometric Path Analysis of Premiums in Monte Carlo Option Pricing Models of Polynomial Drift with Generalized Laguerre Polynomials
29. Cromwell JB (2021) Floor and Ceiling Functions in Continued Fraction Representations for Mathematical Constants
30. Cromwell JB (2021) Gamma Functions and Transcendental Numbers for Mathematical Constant Classification
31. Cromwell JB (2021) A Modified Fractional Derivative Operator Based on the Beta Function for Differential Equation Systems in Mathematical Biology
32. Cromwell JB (2021) Transcription factor Regulation of Phosphorylated Ligands in *Oryza sativa* U+200Bj
33. Cromwell JB (2021) Absciscic Acid-Regulated Gene Expression In Seed Development of *Oryza sativa*
34. Cromwell JB (2021) Embryonic Abundant Protein Co-Expression in Hydrophilic Plants like *Oryza Sativa*
35. Cromwell JB (2021) Regulation of the Sulfation of Molybdenum in Protein Co-Expression of *Oryza sativa*
36. Cromwell JB (2021) Transcriptional Factors Repressors of Early Auxin Response at Low Auxin Concentrations in Co-Expression Networks of *Oryza sativa*
37. Cromwell JB (2021) Protein Co-Expression and AM Formation Regulation in *Oryza sativa*
38. Cromwell JB (2021) Complex Formation with Phosphorylated Ligands by Interfering with Kinases and their Effectors in Protein Co-Expression Networks in *Oryza sativa*
39. Cromwell JB (2021) Germination Inhibition Under Stress with Protein Co-Expression Interaction in *Oryza sativa* *Oryzasativa*
40. Cromwell JB (2021) Controlling Axillary Meristem Initiation in Co-Expression Networks of *Oryza sativa* *Oryzasativa*
41. Cromwell JB (2021) Geometric Path Analysis of Graph Structures in Premiums from Monte Carlo Option Pricing Models of Polynomial Drift with Generalized Laguerre Polynomials
42. Cromwell JB (2021) Modular J Functions and Ratios of Fibonacci Polynomials as Basis Polynomials for Hypergeometric Functions in the Complex Domain
43. Cromwell JB (2021) Phosphorylation Activity in Signal Transduction toRegulate Growth in Azuki Bean Development
44. Cromwell JB (2021) Scale Designand the Generalized Beta Distribution for the Coexpression of Protein Interaction for a Bowman-Birk typeproteinase inhibitor with KTI3 PM34 and MP2
45. Cromwell JB (2021) Molecular Properties of Spiral Chains in the Community Organization and Network Structure of CYP1A2
46. Cromwell JB (2021) Distributional Design and Classification of Motif Frequencies in a Contemporary Classical Jazz Album Assembly for Performance Improvisation
47. Cromwell JB (2021) Chemical Ratios of CYP1A2 Subsequences and Anti-apoptotic Genes of Compound Resistance Expression with Irinotecan
48. Cromwell JB (2021) Trentonin Numerical and Structural Similarities for Expression Modification in Retinol Metabolism
49. Cromwell JB (2021) Hydrogen and Type Two Distributional Classifications for Gene Expression Modification in Carcinoma Cell Lines
50. Cromwell JB (2021) The Positive Relationship Between Polar Surface Area Efficiency and Hydrogen Bond Acceptors in Bounded Hydrogen Carbon Cancer Treatment Compounds
51. Cromwell JB (2021) Molecular Descriptor Combinatorial Design for Ratio Relationship Categorization Based on Chemical Structure in Cancer Treatment
52. Cromwell JB (2021) Molecular Complexity Path Length and Carbon Classification in Chemical Carcinogenesis Treatment
53. Cromwell JB (2021) Folate Synthesis and The Cytochrome P450 System with Methotrexate and Lapatinib
54. Cromwell JB (2021) Cytochrome P450 Leucine Binding with Sestrin 2 and mTOR Activation for Protein Biosynthesis Regulation
55. Cromwell JB (2021) Distribution Classification of Fluctuations and Peptide Subsequences Properties for Protoporphyrin Ferrochelatase
56. Cromwell JB (2021) A Compendium of 7 Days in Cancer Genomics with Application to the R C and TeX Computer Languages for Scientific Writing
57. Cromwell JB (2021) Sampling Similarities of Heme Molecular Complexity for Functional Classification and Compound Discovery
58. Cromwell JB (2021) Ratio Design for Modulation of Deregulation and Overexpression with Decreased ERK Signaling



59. Cromwell JB (2021) Parasitic Interactions Antimicrobial Actions and Bacteriostatic Antibiotics with Cytochrome P450 Inhibitors
60. Cromwell JB (2021) Reduced Rank Vector Generalized Linear Model and Vector Cubic Spline Estimation of Rule Set Based Molecular Descriptor Collections for Bacteriostatic Antibiotic Design
61. Cromwell JB (2021) Bacterial Cellular Metabolism Chemical Complexity Moment Models in the Binding of Aminoacyl-tRNA to the mRNA-Ribosome Complex
62. Cromwell JB (2021) Optimal Portfolio Performance of Bacteriostatic Pharma Stock Price Dynamics with Biomedical and Mathematical Rule Designs
63. Cromwell JB (2021) Comparison of Econometric Models for Short Run Optimal Pharmaceutical Portfolio Performance
64. Cromwell JB (2021) The Moment Structure and Hypothesis Testing of Convex Scale Designs for Bivariate Mixture Distributions
65. Cromwell JB (2021) Co-Moment Diversification Potential with Mixture Distributions for Pharmaceutical Portfolio Optimization Based Risk Classifications
66. Cromwell JB (2021) Lexical Diversity Complexity of Information and Readability Measure Modification for Machine Learning and Decision Making
67. Cromwell JB (2021) Distributional Readability Index Designs for Category Mapping of Biomedical Information Sets
68. Cromwell JB (2021) Maximum Likelihood Estimation of Heterogeneous Gastrointestinal Cancers Data Filters with Dirchlet and Mixture Distributions for Topical Model Designs
69. Cromwell JB (2021) Chemical Functional Group Classification of Helicobacter Pylori Protein Expression Interaction with Tanimoto Structural Filters for Gastrointestinal Cancers
70. Cromwell JB (2021) Molecular Filtering Based on Anatomical Gastrointestinal Cancer Treatment Protocol Vocabulary and N Gram Structural Similarity Descriptions
71. Cromwell JB (2021) Pattern Recognition in Reaction Classes of Substrate Product Pairs and Functional Groups
72. Cromwell JB (2021) Structural Similarity Complexity and Post Translational Proteins with Medicinal Herbal Oils
73. Cromwell JB (2021) Molecular Formula Ratios Scale Estimation and Distributional Hypothesis Testing for Medicinal Plant Extracts
74. Cromwell JB (2021) Metric Design for Chemical Fingerprint Grouping with Medicinal Plants for Feature Based Correlations
75. Cromwell JB (2021) Contextual Relevance and Polynomial Approximations of Integer Combinatorics in Molecular Design Similarities Filtering and Classification for Medicinal Plants.
76. Cromwell JB (2021) NADP+ Products Peptidoglycan Biosynthesis and Gastric Acid Secretion with Gram Negative Bacterial Cell Wall Biosynthesis Inhibitors
77. Cromwell JB (2021) Cellular Fitness Longevity and B Cell Receptor SubGraph Properties and Metrics
78. Cromwell JB (2021) Longevity Regulation B cell Receptor Signaling and Intestinal Immune Network for IgA Production with RELA Maximum Likelihood Estimation of Transition Matrices for RELA Nucleotides
79. Cromwell JB (2021) CDX2-Overexpression to Transcriptional Activation and Repression
80. Cromwell JB (2021) Classification Variations in Translated Nucleotide Sequences Transition Probabilities for Glycosaminoglycan Binding Proteins in Mitogen-Activated Protein Kinase Cascades
81. Cromwell JB (2021) Activated Oncogenes and Positive and Negative Feedback Circles in p53 Signalling
82. Cromwell JB (2021) Control of Asymmetric Cell Division and Beta-catenin Gene Activation in the Wnt Signalling System
83. Cromwell JB (2021) Mutation-inactivated TGFBR2 Mutation-inactivated SMAD2 Cellular Functions of Proliferation Apoptosis Differentiation and Migration Regulated by TGF-beta
84. Cromwell JB (2021) Adherens Junction Network FYN Community Membership Structure and Fluctuations with Structural Variational Properties
85. Cromwell JB (2021) Moran I Coefficient Fluctuation Analysis for FYN Variations in Adherens Junction
86. Cromwell JB (2021) Molecular Properties of Histone Deacetylase Inhibitors in the Phosphatidylinositol Signaling System and Inositol Phosphate Metabolism
87. Cromwell JB (2021) LP Spaces and Proto Oncogene Potential Energy Distribution based on Fluctuation Decomposition in Phosphatidylinositol Signaling System
88. Cromwell JB (2021) Algorithms of Treatment Protocols and Clinical Trial Data for Gastric Carcinoma
89. Cromwell JB (2021) N0 to N3b Regional Lymph Node Metastasis Progression and Curvature in Gastric Carcinoma
90. Cromwell JB (2021) FOS Co-Expression and Lymphocytes of B and T cells in Lymph Nodal Count Stage Identification in Gastric Carcinoma
91. Cromwell JB (2021) Oxalidaceae and Talarozole Inhibitor of Seven Cytochrome P450 Isoforms Retinoic Acid Hydroxylase Vitamin D Degradation
92. Cromwell JB (2021) Boundary Sensitivity in G Protein-Coupled Receptors GTPase-activating Proteins and Cyclin-dependent Kinases in Signal Transduction Systems of Gastric Carcinomas
93. Cromwell JB (2021) DISTRIBUTIONAL PATH SEGMENT STRUCTURAL SIMILARITY IN MUTATION ACTIVATED AND OVEREXPRESSION NETWORKS
94. Cromwell JB (2021) EIGENVALUE PROPERTIES IN SPATIAL CORRELATION FOR KERNEL BASIS OPTIMIZATION FOR G PROTEIN CLASSIFICATION
95. Cromwell JB (2021)  $iU+200B_i$  SPATIAL ELEMENTAL EIGENVALUES AND DIVERSITY PERIODICITY OF TORSION ANGLES IN SIGNALLING PROTEINS

96. Cromwell JB (2021) THE RADIUS OF GYRATION VARIATIONS FOR SHORT STRUCTURAL MOTIFS OF TRYPTOPHAN-ASPARTIC ACID AND DOUBLE-MEMBRANED AUTOPHAGOSOMES
97. Cromwell JB (2021) MOLECULAR PROPERTY GRAPHS OF PAIRWISE ASSOCIATION MEASURE DIVERSITY AND BINARY MULTI-CATEGORY IDENTIFICATION WITH CRYSTAL STRUCTURAL SAMPLING OF WD40 REPEAT DOMAINS
98. Cromwell JB (2021) STRUCTURAL MOTIF CLUSTERS BASED ON THE MOLECULAR PROPERTIES OF RETINOIC ACID RECEPTORS AND ALL TRANS RETINAL BOUND CRYSTALS
99. Cromwell JB (2021) CONTOURS FROM BAYESIAN SPATIAL REGRESSION MODELS FOR CRYSTAL STRUCTURES OF VITAMINS WITH SCALE DIVERSITY COVARIATES
100. Cromwell JB (2021) A MULTIVARIATE GENERALIZED LINEAR SPATIAL REGRESSION MODEL OF VITAMIN CRYSTAL STRUCTURE AND CHEMICAL SCALES
101. Cromwell JB (2021) SPATIAL COMPONENT MODELING IN VITAMIN B CRYSTAL STRUCTURES
102. Cromwell JB (2021) G Protein-Coupled Receptor Kinases Motifs Hydrophobicity and Weakly Connected Components in Neighborhoods of Nitrogen Spatial Distributions
103. Cromwell JB (2021) Nitrogen and Oxygen Mutual Connections Topological Metrics and Molecular Properties of G Protein Crystal Diversities
104. Cromwell JB (2021) Table Designs of Genomic Properties and Vocabularies for Uncharacterized Proteins in the Chinese White Pear
105. Cromwell JB (2021) 3-hydroxy-3-methylglutaryl-CoA C5 isoprenoid biosynthesis mevalonate pathway
106. Cromwell JB (2021) FUNCTIONALLY WEIGHTED MULTIVARIATE DIFFERENCE EQUATION MODELING IN CLUSTERING ALGORITHM DESIGNS FOR SERINE HYDROXYMETHYLTRANSFERASE
107. Cromwell JB (2021) KERNEL CANONICAL CORRELATION ANALYSIS AND SPECTRAL CLUSTERING FOR 11 BETA-HYDROXYSTERIOD DEHYDROGENASE
108. Cromwell JB (2021) Spatial Physiochemical Models of Kelch F-box and WD-40 Domain Proteins and Protein-Protein Interaction Mediation in Protein Ubiquitination
109. Cromwell JB (2021) Protein Turnover Temperature Gene Expression and Oxidative Stress Response for Ubiquitin-Protein Ligase E3A Crystals
110. Cromwell JB (2021) Spatial Models of HECT Ubiquitin Ligase and the Tripartite Motif of TRIM proteins for Pathogen-Recognition and Proteasome Digestion
111. Cromwell JB (2021) Physicochemical Property Selection for BTB/POZ domain Crystals in Spatial Autogressive Models
112. Cromwell JB (2021) Spatial Crystal Model Comparison for Beta Propensity Amino Scales for Nucleotide Excision Repair Bridge Proteins CUL4A Amplification
113. Cromwell JB (2021) Compositional Amino Scale Spatial Models and SOCS Box Protein Kinase Inhibitors
114. Cromwell JB (2021) Spatial Filtering Wavelet Dissimilarity and Side Chain Scale Models for Neddylation and Conformational Change Target Protein Incompatibility
115. Cromwell JB (2021) Comparison of Nonlinear Models for G-type main-sequence star (G2V) Magnetic Field Dynamics
116. Cromwell JB (2021) Average Half Life Distributional Properties of Barrel-shaped Beta-Propeller structure with WD-40 repeats in G Proteins
117. Cromwell JB (2021) The G Protein Average Half Life and pH Charge Relationship in Low Membership Temporal Categories
118. Cromwell JB (2021) NSF Proposal for Plant Genome Research Program-An International Scientific Conference in Mathematical Botany For Multi-Species Proteomic Interaction Modeling Based on Structural Protein Family Motifs
119. Cromwell JB (2021) Inhibitory Molecular Function and Feature Probability Classifications of Tetratricopeptide Repeat (TPR) Domain Sequence Crystals and Chains
120. Cromwell JB (2021) Variations in Tikhonov Regularization Estimators for H-bonding and Alpha Propensities in Glucose-dependent Insulinotropic Polypeptides
121. Cromwell JB (2021) A Modified Multidimensional Hybrid Genetic Algorithm Based on Matrix Conditioning for Molecular Feature Spaces and Projection Operators
122. Cromwell JB (2021) Molecular Property Filtering and Gaussian Mixture Modelling for Multiple Sequence Alignments of MHC class I Glycoproteins and T Cells for Immune Response Antigen processing and Presentation
123. Cromwell JB (2021) Multiple Sequence Alignments Of Inhibitory Proteins and Molecular Feature Consistency with Markovian Transition Matrix Estimation
124. Cromwell JB (2021) DNA Topoisomerase Topology and Binding Atomic Entanglement for Fixed Integer Coefficients Polynomial Representation
125. Cromwell JB (2021) Meta Heuristic Optimization of Shape Parameters for Multivariate Distributions in Alexander Polynomial Generation and Protein Classification
126. Cromwell JB (2021) Maximum Likelihood Estimation of Multi-dimensional Distributional Parameters Based on Empirical Moment Matrices of Crystal Collections
127. Cromwell JB (2021) AN EIGHT PARAMETER TWO DISTRIBUTION MIXTURE FOR OPTIMIZATION OF CRYSTAL ATOM MATRICES WITH PROTEIN FAMILY DIVERSITY
128. Cromwell JB (2021) A DISTANCE CLUSTER AND DENROGRAMIC ANALYSIS OF MOLECULAR PROPERTIES OF DNA BINDING AND OLIGOMERISATION DOMAINS OF P53 CRYSTAL MAPS
129. Cromwell JB (2021) A COMPARISON OF EMPIRICAL DISTRIBUTIONS FOR SAMPLED P53 AND RUNX1 CRYSTALS

130. Cromwell JB (2021) A FLUCTUATION ANALYSIS OF CRYSTAL STRUCTURES FOR RUNX1 AND P53 DOMAIN MUTATIONS OF Y220C R280K R273H AND R273C
131. Cromwell JB (2021) Environmental Change TP63 Expression Regulation and the Topological Molecular Properties of the 310 Helix Subsequences
132. Cromwell JB (2021) Cell Cycle Regulation and Beta Sense Analysis of Periodicity of P53 P63 and P73 Crystal Structures
133. Cromwell JB (2021) Organizational Features of Community Membership in the Small Scale P63 Co-Expression Network
134. Cromwell JB (2021) Regulation of Epithelial Morphogenesis in TP53 TP63 and TP73 Triad Co-expression Relationships
135. Cromwell JB (2021) MAPK signaling Glutamic Acid and Apoptosis in TP63 Co-Expression Community Relationships
136. Cromwell JB (2021) Transcription Regulatory Region Sequence-Specific DNA Binding and ATP-dependent Activation of SUMO1 SUMO2 SUMO3 SUMO4 UBE2I and UBE2K CoExpressions
137. Cromwell JB (2021) OUTLIER CLASSIFICATION AND TESTING IN MULTI-SPECIES DAXX KERNEL BASED SPECTRAL CLUSTERS AND LOCAL FLUCTUATION PREDICTION
138. Cromwell JB (2021) Regulation of Cell Cycle Progression in Lymph Node Metastasis with CDKN1A CDKN1B and PCNA
139. Cromwell JB (2021) Maximum Likelihood Estimation of Fluctuations with Bessel and Radial Basis Kernel Specification for DAXX Crystals
140. Cromwell JB (2021) Cyclin-Dependent Kinase Inhibitors and Interactions
141. Cromwell JB (2021) Small Ubiquitin-related Modifier Membership into P57 Network Communities Based on Relationship Category and Expression Half-Life
142. Cromwell JB (2021) Caspase Activation Cascade and Community Network Relationships and Chemical Treatment Designs for Expression Modification in Carcinoma Cell Lines
143. Cromwell JB (2021) Cyclin-dependent Kinase Co-Expression of Community Networks and Half-Life Protein Properties with 14-3-3 Adapter Proteins
144. Cromwell JB (2021) Taxonomic Diversity in the Epithelial Sodium Channel Trait Distance in SCNN SMAD UBE2 and WNK Variations
145. Cromwell JB (2021) A Mathematical Model of Cellular Division Regulation with a Graph Motif of HIF1A NR3C1 SUMO1 NCOA1 NCOA2 HIF3A TP53 and NCOA1 Coexpression
146. Cromwell JB (2021) The Histone Deacetylation Motif with Distributional Parameters and Exogenous Sensitivities in Cellular Processes
147. Cromwell JB (2021) RXR-gamma and Gene Expression Regulation
148. Cromwell JB (2021) A Mathematical Model of F-box-like/WD repeat-containing Protein-Protein Interaction and Proteasomal Degradation of Transcription Repressor Complexes with TP53

149. Cromwell JB (2021) Wnt Signalling and Transcription Factor 7 Like 2 Repressor and Activation Models with CTNNB1 in Epithelial Cell Compartments
150. Cromwell JB (2021) A Review of Overexpression in Oryza Sativa for Calcium-Dependent Protein Kinase Relationship Based in Stress Response
151. Cromwell JB (2021) A Mathematical Model of Modulators or Transducers in Transmembrane Signaling Systems for Oryza Sativa
152. Cromwell JB (2021) A Mathematical Model of Nitrogen Deficiency for Oryza Sativa
153. Cromwell JB (2021) A Mathematical Model of Cell Cycle Growth and Proliferation Regulation in Oryza Sativa

In this section the four courses on the Mathematical Learning Space Research Portfolio has ten examples for each course of articles for publication.

## 11 Preprint Classroom R Program Examples

1. Cromwell JB (2020) DNA Shape Categories for Statistical Learning Models of Gene Overexpression Amplification Mutation and Regulation in GastroIntestinal Cancer
2. Cromwell JB (2020) Delayed Differential Equations for Intestinal Metaplasia of Gene Expression Modulation in Gastric Cancer
3. Cromwell JB (2020) Mucomodulators and Mucin Dependent Oncogenic cell Signaling and Immunomodulation in Gastric Cancer
4. Cromwell JB (2020) A Mathematical Model of Molecular Complexity and Epigenetic Modifications with Mucin Regulation in GastroIntestinal Cancers
5. Cromwell JB (2020) Minimal Spanning Trees and Multivariate Nonparametric Distributional Testing for Gastric Cancer Chemosensitivity
6. Cromwell JB (2020) A Mathematical Model of Multifunctional Regulators of Gut Homeostasis with Microbiota Diversity
7. Cromwell JB (2020) Differential Equation Specification and Polysyllabic Filtering for Medical and Chemical Vocabulary Interaction Models in GastroIntestinal Cancer Research
8. Cromwell JB (2020) Stability Classification Designs for Differential Equation Systems of DNA Protein and Compound Interaction Combinatorics DNA
9. Cromwell JB (2020) A Delayed Differential Equation Model of Phytochemicals in GastroIntestinal Cancer
10. Cromwell JB (2020) Delayed Fractional Differential Equation Models in Gastrointestinal Cancer
11. Cromwell JB (2020) A Mathematical Model of Viral Dynamics Mutations and the Immune System
12. Cromwell JB (2020) Nonlinear Time Series and Marginal Regression Models for International Viral Dynamics in Epidemiological Surveillance Networks
13. Cromwell JB (2020) Threshold Identification and Classification in a Nonlinear Time Series Analysis of International Viral Dynamics in EARS Epidemiological Surveillance Networks

14. Cromwell JB (2020) A Mathematical Model of Immunopathogenesis of Rheumatoid Arthritis with effects from Tocilizumab Dose Efficacy Treatment
15. Cromwell JB (2020) A Mathematical Model for Chloroquine Phagosome Interaction
16. Cromwell JB (2020) A Mathematical Model of Respiratory Disease and Pulmonary Kinetic Processes
17. Cromwell JB (2020) A Mathematical Model of VP1-4 Spherical Viral Capsid Disassembly
18. Cromwell JB (2020) A Mathematical Model of Stress Induced Upregulation in Protein Responses
19. Cromwell JB (2020) A Mathematical Model of the Assembly of a 20S Proteasome with Peptide Post-Translational Modification
20. Cromwell JB (2020) A Molecular Machine Learning Algorithm of Multi-Protein Complexes in The Digestion System
21. Cromwell JB (2020) A Mathematical Model of Normal Mode Superposition in Compound-Protein Interaction
22. Cromwell JB (2020) A Mathematical model of Cell Cycle Process Regulation of Cell Cycle Chromosome Segregation and G2/M Transition
23. Cromwell JB (2020) A Mathematical Model of Telomere Maintenance and Telomeric DNA Binding
24. Cromwell JB (2020) A Mathematical Model of Mitotic Biological Processes in a Gene Ontology
25. Cromwell JB (2020) A Mathematical Model of DNA Repair Genes/Proteins Based on Molecular Function and Signaling Pathway
26. Cromwell JB (2020) A Mathematical Model of Glycoproteins of the Epithelia Mucosa in the Mucociliary System
27. Cromwell JB (2020) A Mathematical Model of Transcriptional Activity for Helix-Loop-Helix Proteins
28. Cromwell JB (2020) A Delay Differential Equation Model for Signal Transduction in Hepatocellular Carcinoma
29. Cromwell JB (2020) A Mathematical Model of Heterodimer DNA helix Bending
30. Cromwell JB (2020) A Mathematical Model of the Regulation of Intracellular Signaling Cascades
31. Cromwell JB (2020) A Mathematical Model of Motif Mediation in the Heterotrimeric G-protein Signaling Pathway
32. Cromwell JB (2020) A Mathematical Model of Ribosome Flow
33. Cromwell JB (2020) A Mathematical Model of Transcriptional Translational Protein Folding and Post Translational Errors
34. Cromwell JB (2020) A Mathematical Model of the Biosynthesis of Alkaloids from Shikimate Pathway
35. Cromwell JB (2020) A Mathematical Model of WDR and G Quadruplexes WDR
36. Cromwell JB (2020) A QSAR Feature Matrix Design For Protein-Compound Interaction
37. Cromwell JB (2020) A Mathematical Model of Ribosome Model with Circular mRNA
38. Cromwell JB (2020) A Mathematical Model of Stress Induced Upregulation in Protein Responses
39. Cromwell JB (2020) A Mathematical Model of the Assembly of a 20S Proteasome with Peptide Post-Translational Modification
40. Cromwell JB (2020) A Molecular Machine Learning Algorithm of Multi-Protein Complexes in The Digestion System
41. Cromwell JB (2020) A Mathematical Model of Normal Mode Superposition in Compound-Protein Interaction
42. Cromwell JB (2020) A Delayed Markov Model of Dance Choreography based on Topological Transformations
43. Cromwell JB (2020) A Mathematical Model for Romantic Music Based on Filter Design
44. Cromwell JB (2020) A Mathematical Model for a Classical Music Composition
45. Cromwell JB (2020) A Mathematical Model for a Jazz Music Composition
46. Cromwell JB (2020) Semi-Markov Representation for Octave Transition Model with Non-Symmetric Jumps in the Transition Rate Designs
47. Cromwell JB (2020) Frequency Based Markov Chains with Recurrent Distributional Positive Feedback Models for Classical Music Compositions
48. Cromwell JB (2020) Recommender System Design of Beginner Piano Classical Composition Motifs Based on Sound Complexity and Diversity Indices
49. Cromwell JB (2020) A Voice Response ChattoBotto for Numerical Sequence Cartography
50. Cromwell JB (2020) A Mathematical Model for a Jazz Music Composition
51. Cromwell JB (2020) Motif Complexity Design of Modal Patterns for Smooth Jazz Compositions in Classical Duplet-Triplet Clusters

## 12 MuseScore Music Compositions for Books and Classroom

1. Cromwell, J. (2022) The RGBA Winds of Neptune
2. Cromwell, J. (2021) 7192021
3. Cromwell, J. (2021) 7202021
4. Cromwell, J. (2021) 7212021
5. Cromwell, J. (2021) 7222021
6. Cromwell, J. (2021) 7232021
7. Cromwell, J. (2021) 7242021
8. Cromwell, J. (2021) 7252021
9. Cromwell, J. (2021) TMLSRP Motif 1
10. Cromwell, J. (2021) TMLSRP Motif 2
11. Cromwell, J. (2021) TMLSRP Motif 3
12. Cromwell, J. (2021) TMLSRP Motif 4
13. Cromwell, J. (2021) TMLSRP Motif 5
14. Cromwell, J. (2021) TMLSRP Motif 9
15. Cromwell, J. (2021) 202189.1
16. Cromwell, J. (2021) 202189.2
17. Cromwell, J. (2021) 202189.3
18. Cromwell, J. (2021) 202183.1 Fold
19. Cromwell, J. (2021) Music 8152021
20. Cromwell, J. (2021) U Got 2.23 Minutes
21. Cromwell, J. (2021) The 6 Island Cycle in Japan
22. Cromwell, J. (2021) 2 Days on Teuri Island
23. Cromwell, J. (2021) A Summer Star Field



## 13

## Hobbies

1. Composing and Performing Classical and Smooth Jazz music
2. Second Language Acquisition with Mandarin and Japanese
3. Electrical Engineering and Robotics
4. Graphic Design and Botanical Scientific Illustrations
5. Playing the Piano and Digital Keyboard
6. Sports-Basketball, Pickleball and Table and Court Tennis
7. International Music
8. Artistic and Scientific Graphic Design
9. Fashion, Clothing Design and Wood Carpentry

## 14

## Recent University Teaching and Research

In this section, Table 2 has the year, university/company, location and title/role for different university and teaching positions that were helpful in the completion of research goals.

Year	University/Company	Location	Title
2017-2022	None		Writer/Programmer
2017	Arizona State University -College of Health Solutions-Department of Biomedical Informatics	Tempe Arizona	Web Application Developer
2016	Wyzant	Tempe Arizona	Mathematics Tutor
2010-2011	University of Pittsburgh - School of Medicine- Department of Biomedical Informatics	Pittsburgh Pa	Lecturer/Consultant Researcher Statistical Software Developer
2004-2006	West Virginia University -Natural Resource Analysis Center, Morgantown, WV	Research Assistant Professor	

Table 2: Selected Recent Research Positions to Attain Research Goals and Highlights of Formal Education with 12+ hours in independent reading and study along with 10 graduate hours in auditing courses. Graduate Research Assistant. 30+ graduate credit hours in Mathematics and Statistics. Research Assistant with work in demography and population dynamics useful in cancer research at the Regional Research Institute at WVU. Minor in Mathematics and 16th and 18th Century Philosophy and the Philosophy of Science. Mathematics Tutor in the Math department.

## 15

## Summaries of Recent Work

1. 9/ 2018 - Current **Technical Writer** none mathlearningspace.weebly.com Tempe, AZ and Bridgeville, PA
2. Current work for publication with over 200 preprints and 11 books with R and C++ programs in the areas of mathematics, biology and music. Continued development in speaking and writing in the Japanese and Chinese Languages.
3. 9/ 2017 – 11/2017 **Software Developer** Biomedical Informatics, College of Health Solutions, Arizona State University www.asu.edu Tempe, AZ
4. Projects Database Programming with SQL in PostgreSQL and User Interface Design in Javascript, CSS, HTML
5. 2/2016 – 9/2017 **Mathematics Tutor** WyzAnt.com Phoenix, AZ
6. While seeking work as a research professor and/or software engineer at ASU, work as a mathematics tutor and writing scientific journal articles for NSF and NIH grant proposals.
7. Subjects Tutored Courses in Econometrics, Discrete Mathematics, Java and Statistics
8. Projects **Projects in Mathematical Biology for Cancer Research with Algorithmic Implementation in R, C, HTML5, Javascript, MySQL and SQL Server with LaTeX for both Sequential and Parallel Programming in SIMD, MIMD and multicore Intel and AMD Chip Designs with NVidia GPU based Graphic Cards**

9. Software Dashboards with Kendo, Concept Maps with Graph theory for Architectural and UI Design Patterns in MVC CSharp.NET, C++ .NET, HTML5, Javascript, CSS, R with Shiny and SQL based database engines
10. 9/2015-11/2015 **Software Consultant** Robert Half International Consol Energy Pittsburgh, PA
11. Software Designed Developed Data Management Algorithms with ASP.NET, VB.NET and SQL Server.
12. Database Designed Developed Database, Table/View Scripts, SQL for ASP.NET forms.
13. 12/2014-1/2015 **Statistical Software Consultant** Renaissance Learning Wisconsin Rapids, Wisconsin
14. (a) Team Lead with the Designed Development of Csharp.NET, R and NMATH Statistical Algorithms for Metrics in School Dashboards and Reporting. (b) Written Technical Proposal for Predictive API Development Language for Regression Analysis. (c) Consultant Performance Benchmarking Statistical APIs NAG, NMATH, R. (d) Participated Team Meetings Weekly Agility Sprints.
15. 8/2014-12/2014 **Software Consultant** Oxford Solutions Utility Service Partners Pittsburgh, PA
16. Reports Designed Developed and Implemented SQL Server based Reports with SSRS, SSIS, SSAS.
17. Algorithms Reviewed, Modified, and Developed Data Management Algorithms in VB.NET for Statement Design and Processing.
18. Translation Migrated ETL Algorithms from VB.NET to CSharp.NET.
19. 8/2009-12/2011 **Mathematical and Statistical Software Consultant** University of Pittsburgh Medical School Department of Biomedical Informatics, Pittsburgh, PA Two years developing automated software in R and .NET to generate scientific journal articles with statistical methodologies and visual programming architectures in the areas of time series analysis and machine learning. Also, developed informatics architectures to explore university resources for institutional and medical researcher ranking based on disease ontologies with code demonstrations at different universities.
20. Machine Learning **Designed Developed Implemented Algorithms Automated Machine Learning and Time Series Analysis** Csharp.NET, R Statistical Language SQL Server with Telerik Controls, Accord Math, Image Processing and Machine Learning API.
21. API Designed Developed Implemented Algorithms multi-threaded NLP Automated Information Retrieval Application NCBI NHeReporter CTSI NSF Research Csharp.NET, R Statistical Language SQL Server Telerik Controls Accord.
22. Communication **Demonstrated Applications PowerPoint Presentations Posters Demos** at University of California, San Diego Biomedical Informatics Program, University of Pittsburgh Medical School Biomedical Informatics Program, UseR Conference in Maryland, Statistical Analysis of Neural Data (SAND) conference at Carnegie Mellon University.
23. Grant Proposals Submitted Journal Articles and SBIR grants in both Neuroscience, Mathematics and Programming.
24. 8/2004-8/2006 **Research Assistant Professor** West Virginia University Natural Resource Analysis Center, Morgantown, WV Developed R based programs with arcGIS with graph and Markov Chain models for the hydrological modeling of river and stream networks for watershed management, pollutant transport models and acid mine drainage.
25. (a) Team Lead Designed Developed Implemented Csharp.NET R Statistical Language application Water Quality Management. (b) Designed Developed Implemented Csharp.NET application for modeling USGS hydrology data sets with Oracle. (c) Presentation Application WV Department

of Environmental Protection. Designed Developed Implemented Statistical Algorithms for Spatial-Temporal Analysis. (d) Developed LOWESS Stationary Structural Time Series Models Recommendations for student research. (e) Collaborated Grant Proposals WV Department of Agriculture and Team Lead Collaborative Meetings.