Supplementary to "Inter-subdiscipline Analysis based on Mathematical Statements"

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A. The architectures of three neural networks, LSTM, CNN and Transformer.

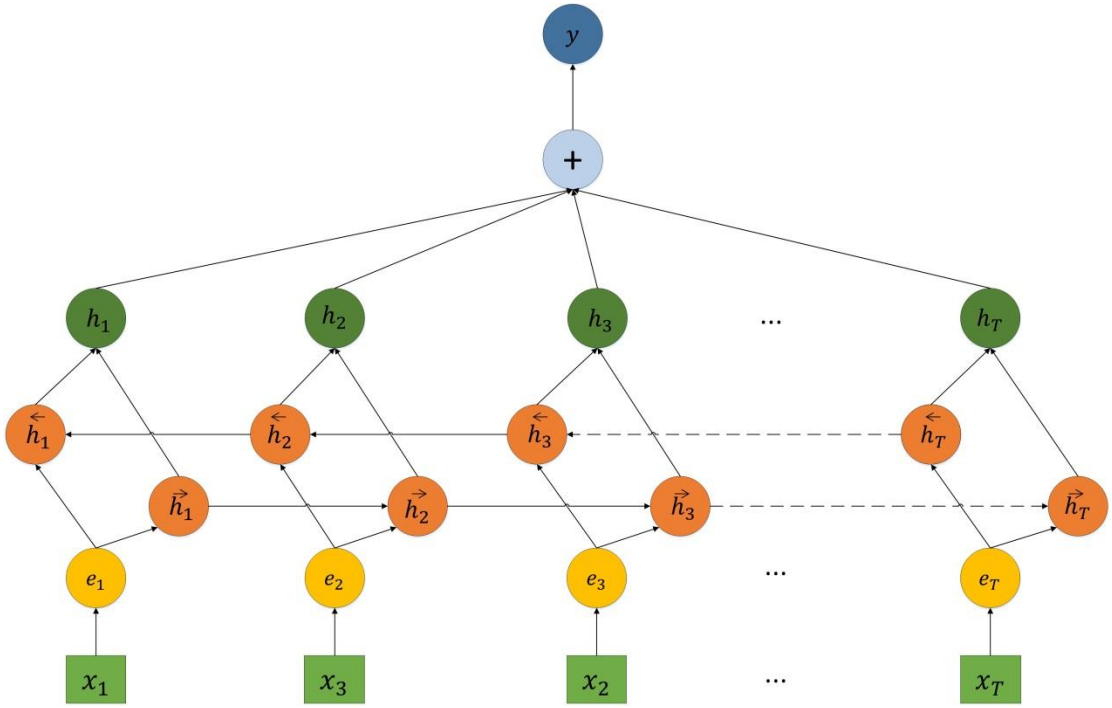

Fig. S1 The structure of LSTM used in the experiment

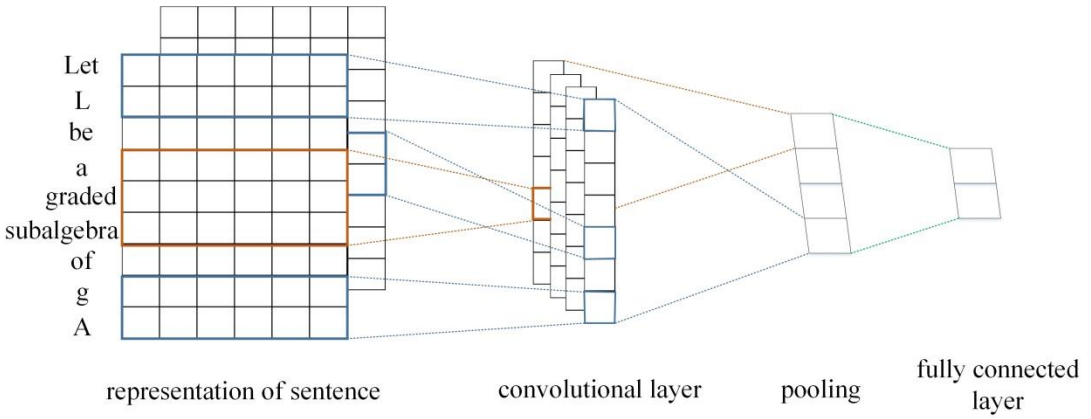

Fig. S2. The structure of CNN used in the experiment

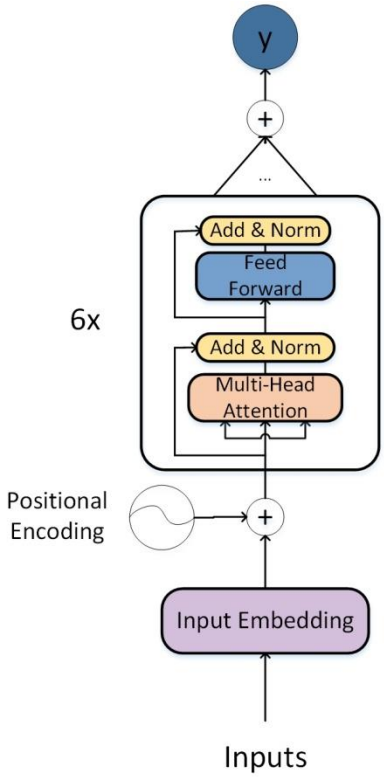

Fig. S3 The structure of Transformer used in the experiment

B. The list of the mathematical textbooks used in the experiment

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1. (-1, 1) and Generalized Kac-Moody Algebras
2. ON THE STRUCTURE OF KAC–MOODY ALGEBRAS
3. Kac-Moody Algebras in M-theory
4. Kac-Moody Algebras
5. Kac-Moody Algebras and Applications
6. The Kac-Moody Algebras
7. Kac-Moody algebras: An introduction for physicists
8. LECTURES ON K-THEORY
9. K-THEORY. An elementary introduction
10. Lecture Notes on Algebraic K-Theory
11. K-THEORY
12. Algebraic K-theory of Number Fields
13. Algebraic K-Theory and Its Applications
14. AN INTRODUCTION TO ALGEBRAIC K-THEORY
15. Universal Algebra in Type Theory
16. Universal Algebra
17. From Universal Algebra to Universal Logic
18. AN OVERVIEW OF MODERN UNIVERSAL ALGEBRA
19. Categorical Methods in Universal Algebra
20. On Universal Algebra over Nominal Sets
21. Universal Algebra
22. A Course in Universal Algebra
23. Applying Universal Algebra to Lambda Calculus
24. LATTICE THEORY
25. Lattice theory

26. Lattice Theory. First Concepts and Distributive Lattices
27. Notes on Lattice Theory
28. Notes for Introduction to Lattice theory
29. Lattice Theory: Foundation
30. Introduction to Lie Algebras and Representation Throry
31. Lie Groups, Lie Algebras, and Their Representations
32. Lie Groups, Lie Algebras, and Representations An Elementary Introduction
33. Lie Groups
34. An Introduction to Lie Group and Lie Algerbras
35. Lie groups and Lie algebras
36. Lie groups, Lie algebras, and their representations
37. Introduction to Lie Groups and Lie Algebras
38. An Introduction to Lie Groups
39. MODULE THEORY An approach to linear algebra
40. Module Theory
41. Algebra An Approach via Module Theory
42. Basic module theory
43. MODULE THEORY An approach to linear algebra
44. Modules: An Introduction
45. Introduction to Abstract Algebra
46. Abstract Algebra Theory and Applications
47. Introduction to Abstract Algebra (Math 113)
48. Lectures in Abstract Algebra (GTM 30)
49. Lectures in Abstract Algebra (GTM 31)
50. Lectures in Abstract Algebra (GTM 32)
51. Noncommutative Algebra
52. Problems in Algebraic Number Theory
53. Abstract Algebra (GTM 242)
54. Topological Methods in Group Theory
55. A Book of Abstract Algebra
56. Abstract Algebra
57. Homological Algebra (Yuri Berest, Daniel Miller, Sasha Patotski)
58. Homological Algebra
59. A Course in Homological Algebra
60. Basic Homological Algebra
61. HOMOLOGICAL ALGEBRA
62. Homological Algebra (Irena Swanson)
63. Notes on Homological Algebra
64. AN INTRODUCTION TO HOMOLOGICAL ALGEBRA
65. LINEAR ALGEBRA
66. LINEAR ALGEBRA (GTM 23)
67. Advanced Linear Algebra
68. Introduction to Linear Algebra
69. FUNDAMENTALS OF LINEAR ALGEBRA
70. LINEAR ALGEBRA (KENNETH HOFFMAN)
71. Category Theory A Gentle Introduction
72. Category Theory Lecture Notes
73. Category Theory (OXFORD)
74. Category Theory in Context
75. Category Theory (Steve Awodey)
76. A Gentle Introduction to Category Theory
77. Banach Function Space and Interpolation Methods
78. Banach Spaces
79. Convexity and Optimization in Banach Spaces
80. Banach Spaces Theory
81. Measure and Integration
82. MEASURE AND INTEGRATION (Dietmar A. Salamon)
83. Measure and Integral
84. Measure Theory & Integration
85. An Introduction to Nonlinear Functional Analysis and Elliptic Problems
86. Nonlinear Functional Analysis and its Applications

87. Nonlinear Functional Analysis
88. Nonlinear Functional Analysis (Gerald Teschl)
89. Functional Spaces
90. Function-space compactifications of function spaces
91. Function Spaces (Chapter 1)
92. Function Spaces (Chapter 2)
93. Signal Processing Problems on Function Space: Bayesian Formulation, Stochastic PDEs and Effective MCMC Methods
94. Operator algebras: an introduction
95. Introduction to operator algebras and their applications to mathematical physics
96. Lecture Notes on Operator Algebras
97. INTRODUCTION TO OPERATOR ALGEBRAS
98. Operator Algebra
99. Notes on operator algebras
100. Positive Linear Maps of Operator Algebras
101. THEORY OF LINEAR AND INTEGER PROGRAMMING
102. Notes on Topological Vector Spaces
103. An introduction to some aspects of functional analysis, 3: Topological vector spaces
104. Topological Vector Spaces
105. E.2 Topological Vector Spaces
106. Linear Topological Spaces
107. A Short Introduction to Hilbert Space Theory
108. Hilbert Spaces
109. Hilbert Spaces Basics.
110. An Introduction to Hilbert Spaces
111. Operators on Hilbert Space
112. Probability: Theory and Examples
113. Introduction to Geometric Probability
114. Geometric Modeling in Probability and Statistics
115. Geometric Aspects of Probability Theory and Mathematical Statistics
116. An Introduction to Geometric Probability
117. Markov Processes
118. Markov processes (Andreas Eberle)
119. MARKOV PROCESSES: THEORY AND EXAMPLES
120. An Introduction to Markov Processes
121. Introduction to Stochastic Analysis
122. Introduction to Stochastic Analysis (Andreas Eberle)
123. Lectures on Stochastic Analysis
124. STOCHASTIC ANALYSIS
125. Elements of Stochastic Calculus and Analysis
126. COURSE NOTES STATS 325 Stochastic Processes
127. Lecture 5 : Stochastic Processes I
128. Lectures on Stochastic Processes (K. Ito)
129. INTRODUCTION TO STOCHASTIC PROCESSES WITH R
130. Several Complex Variables
131. Several Complex Variables (Jaap Korevaar, Jan Wiegerinck)
132. Approximation Theory and Approximation Practice
133. A Short Course on Approximation Theory
134. A Short Course on Approximation Theory (N. L. Carothers)
135. NUMERICAL METHODS AND APPROXIMATION THEORY
136. Weierstrass and Approximation Theory
137. THE THEORY OF FUNCTIONS OF A REAL VARIABLE
138. Functions of One Real Variable
139. Theory of functions of a real variable
140. Affine Geometry Lesson (George Francis)
141. The Fundamental Theorems of Affine and Projective Geometry Revisited
142. AFFINE AND PROJECTIVE GEOMETRY
143. Basics of A±ne Geometry
144. PROJECTIVE GEOMETRY ON MANIFOLDS
145. Linear Geometry
146. Advanced Linear Algebra
147. Lecture 1: Affine geometry

148. Affine and Projective Universal Geometry
149. CHAPTER II AFFINE GEOMETRY
150. NON-EUCLIDEAN GEOMETRY
151. The Project Gutenberg EBook Non-Euclidean Geometry
152. Chapter 3 NON-EUCLIDEAN GEOMETRIES
153. Riemannian Geometry
154. Lecture 33. Non-Euclidean Geometry
155. Herbrand's theorem and non-Euclidean geometry
156. NON-EUCLIDEAN GEOMETRIES
157. A Quick Introduction to Non-Euclidean Geometry
158. THE FUNDATIONS OF GEOMETRY
159. Foundations of Geometry
160. Foundations of Geometry (Gerard A. Venema)
161. The Foundations of Geometry
162. On the Formalization of Foundations of Geometry
163. Basic Geometry
164. Euclid's Geometry
165. Euclidean Geometry
166. Euclidean Geometry (Rich Cochrane)
167. EUCLID'S ELEMENTS OF GEOMETRY
168. INTRODUCTION TO EUCLID'S GEOMETRY
169. Problem-Solving and Selected Topics in Euclidean Geometry
170. PLANE AND SPHERICAL TRIGONOMETRY
171. The Project Gutenberg eBook of Spherical Trigonometry
172. Lectures on Discrete Geometry
173. Introduction to spherical geometry
174. Spherical Geometry
175. Spherical Geometry MATH430
176. Spherical Geometry (Eric Lehman)
177. DIFFERENTIAL GEOMETRY Series of Lecture Notes and Workbooks for Teaching Undergraduate Mathematics
178. Basic Concepts of Differential Algebra
179. A FIRST LOOK AT DIFFERENTIAL ALGEBRA
180. Algorithms and methods in differential algebra
181. Elementary Differential Geometry: Curves and Surfaces
182. Introduction to Differential Geometry
183. A Survey of Computational Differential Algebra
184. Elementary Differential Geometry: Lecture Notes
185. Classical Differential Geometry
186. Differential Algebra
187. NOTES ON DIFFERENTIAL ALGEBRA
188. Lectures on Differential Geometry
189. INTRODUCTION TO DIFFERENTIAL GEOMETRY
190. A Course in Differential Geometry
191. Fundamentals of Differential Geometry
192. Differential Geometry Connections, Curvature, and Characteristic Classes
193. Factorization-free Decomposition Algorithms in Differential Algebra
194. DISCRETE DIFFERENTIAL GEOMETRY: AN APPLIED INTRODUCTION
195. DIFFERENTIAL GEOMETRY: A First Course in Curves and Surfaces
196. Number Theory IV Transcendental Numbers
197. The Beginning of Transcendental Numbers
198. On transcendental numbers: new results and a little history
199. Math 249A Fall 2010: Transcendental Number Theory
200. A Friendly Introduction to Nulllber Theory
201. Elementary Number Theory
202. A Classical Introduction to Modern Number Theory
203. Elementary Methods in Number Theory
204. An Introduction to Number Theory
205. Introduction to Algebraic Number Theory
206. Introduction to Algebraic Number Theory
207. Algebraic Number Theory
208. A Course in Computational Algebraic Number Theory

209. Problems in Algebraic Number Theory
210. Diophantine Approximation and Dirichlet Series
211. Introduction to Diophantine Approximations
212. DIOPHANTINE EQUATIONS AND DIOPHANTINE APPROXIMATION
213. DIOPHANTINE APPROXIMATION
214. Number Theory Volume I: Tools and Diophantine Equations
215. Introduction to Diophantine Approximation
216. Roth's Theorem: an introduction to Diophantine approximation
217. Probabilistic Number Theory
218. STATISTICAL INDEPENDENCE IN PROBABILITY, ANALYSIS AND NUMBER THEORY
219. An introduction to probabilistic number theory
220. A Course in Computational Algebraic Number Theory
221. Advanced Computational Number Theory
222. Advanced Topics in Computational Number Theory
223. Math 788M: Computational Number Theory
224. Computational Number Theory
225. MULTIPLICATIVE NUMBER THEORY I: CLASSICAL THEORY
226. Analytic Number Theory
227. Problems in Analytic Number Theory
228. Algebraic Topology: An Introduction
229. An Introduction to Algebraic Topology
230. A Basic Course in Algebraic Topology
231. Homology Theory An Introduction to Algebraic Topology
232. Algebraic Topology A First Course
233. Fundamentals of Algebraic Topology
234. Topology and Geometry
235. General Topology
236. General Topology (GTM 27)
237. Classical Topology and Combinatorial Group Theory
238. An Introduction to Geometric Topology
239. Topology and Geometry
240. Geometric Topology in Dimensions 2 and 3
241. Homotopical Topology
242. Differential Topology
243. An Introduction to Differential Topology, de Rham Theory and Morse Theory
244. Differential Topology
245. INTRODUCTION TO DIFFERENTIAL TOPOLOGY
246. Differential Topology (Bjørn Ian Dundas)
247. Differential Topology (GTM 33)
248. Introduction to Differential Topology
249. Discrete Geometry
250. Discrete Geometry—From Theory to Applications: A Case Study
251. Introduction to Discrete Geometry
252. Lectures on Discrete and Polyhedral Geometry
253. A characterization of generalized Kac-Moody algebras
254. MATRIX CHAIN MODELS AND KAC-MOODY ALGEBRAS
255. 2-Kac-Moody Algebras
256. An Exposition of Generalized Kac-Moody algebras
257. Some highlights from the history of probabilistic number theory
258. Applications of Number Theory in Statistics
259. Introduction to Analytic and Probabilistic Number Theory\
260. Representations of Kac-Moody algebras using twisted vertex operators