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Running Genetic Algorithm with LightGBM...

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=== GENETIC ALGORITHM OPTIMIZATION ===

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[Initialization]

- Population size: 30

- Generations: 20

- Crossover rate: 80%

- Mutation rate: 20%

- Search space: 334 features

- Target: Minimize MSE using LightGBM

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=== OPTIMIZATION RESULTS ===

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▶ Best MSE achieved: 0.000539

▶ Time elapsed: 2158.83 seconds

▶ Features selected: 195/334 (41.6% reduction)

▶ Selected features:

1. AMT\_ANNUITY

2. AMT\_CREDIT

3. AMT\_GOODS\_PRICE

4. CODE\_GENDER

5. DAYS\_ID\_PUBLISH

6. DEF\_30\_CNT\_SOCIAL\_CIRCLE

7. DEF\_60\_CNT\_SOCIAL\_CIRCLE

8. EXT\_SOURCE\_1

9. EXT\_SOURCE\_2

10. FLOORSMIN\_MEDI

11. LIVINGAREA\_AVG

12. NAME\_EDUCATION\_TYPE

13. NAME\_INCOME\_TYPE

14. OWN\_CAR\_AGE

15. REGION\_POPULATION\_RELATIVE

16. REGION\_RATING\_CLIENT

17. REGION\_RATING\_CLIENT\_W\_CITY

18. REG\_CITY\_NOT\_LIVE\_CITY

19. SK\_ID\_CURR

20. Count\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

21. Count\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

22. Count\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

23. CountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

24. CountDistinct\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

25. CountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

26. Max\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_\_\_\_7\_5

27. Max\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

28. Max\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

29. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

30. Max\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_\_0\_0225

31. Max\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_CURRENT\_

32. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

33. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5

34. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_

35. Max\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

36. Max\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

37. Max\_previous\_application\_train\_csv\_CNT\_PAYMENT\_

38. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

39. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_\_1897266

40. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

41. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active

42. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5

43. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

44. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

45. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675

46. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

47. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

48. Mean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225

49. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

50. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

51. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

52. Mean\_previous\_application\_train\_csv\_DAYS\_FIRST\_DRAWING\_

53. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

54. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

55. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

56. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

57. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

58. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

59. Median\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

60. Median\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

61. Median\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

62. Median\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

63. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

64. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225

65. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

66. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

67. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_TYPE\_\_\_Consumer\_credit

68. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

69. Min\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

70. Min\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

71. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

72. Mode\_bureau\_train\_csv\_CREDIT\_TYPE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

73. Mode\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

74. Mode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

75. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

76. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

77. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

78. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_

79. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

80. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

81. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

82. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

83. StdDev\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

84. StdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

85. StdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

86. StdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5

87. Sum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

88. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

89. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

90. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

91. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

92. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

93. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

94. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

95. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_\_\_\_\_983\_5

96. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

97. Sum\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

98. Sum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175

99. LabelPAMT\_GOODS\_PRICE

100. LabelPCODE\_GENDER

101. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

102. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

103. LabelPCount\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

104. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

105. LabelPCountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

106. LabelPDAYS\_BIRTH

107. LabelPDAYS\_EMPLOYED

108. LabelPDAYS\_ID\_PUBLISH

109. LabelPEXT\_SOURCE\_1

110. LabelPEXT\_SOURCE\_2

111. LabelPEXT\_SOURCE\_3

112. LabelPFLAG\_EMP\_PHONE

113. LabelPFLAG\_OWN\_CAR

114. LabelPFLOORSMAX\_MEDI

115. LabelPFLOORSMAX\_MODE

116. LabelPFLOORSMIN\_MEDI

117. LabelPLIVINGAREA\_AVG

118. LabelPMax\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_\_\_\_7\_5

119. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

120. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

121. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5

122. LabelPMax\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_\_0\_0225

123. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_8088\_8175

124. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_

125. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

126. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

127. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

128. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

129. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225

130. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5

131. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_\_\_\_124731\_405

132. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

133. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675

134. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

135. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

136. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

137. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

138. LabelPMean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

139. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

140. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

141. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

142. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

143. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

144. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_

145. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

146. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

147. LabelPMedian\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5

148. LabelPMedian\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

149. LabelPMedian\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

150. LabelPMedian\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

151. LabelPMedian\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

152. LabelPMedian\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

153. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

154. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

155. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

156. LabelPMin\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

157. LabelPMin\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

158. LabelPMin\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_

159. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

160. LabelPMode\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

161. LabelPMode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

162. LabelPNAME\_CONTRACT\_TYPE

163. LabelPNAME\_FAMILY\_STATUS

164. LabelPNAME\_INCOME\_TYPE

165. LabelPOCCUPATION\_TYPE

166. LabelPORGANIZATION\_TYPE

167. LabelPREGION\_POPULATION\_RELATIVE

168. LabelPREGION\_RATING\_CLIENT

169. LabelPREGION\_RATING\_CLIENT\_W\_CITY

170. LabelPREG\_CITY\_NOT\_LIVE\_CITY

171. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

172. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

173. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

174. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

175. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

176. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

177. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

178. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

179. LabelPStdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

180. LabelPStdDev\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_ATM\_CURRENT\_

181. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

182. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

183. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5

184. LabelPStdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

185. LabelPSum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

186. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

187. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

188. LabelPSum\_bureau\_train\_csv\_DAYS\_ENDDATE\_FACT\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

189. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

190. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

191. LabelPSum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225

192. LabelPSum\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

193. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_INSTALMENT\_in\_\_\_1654\_5\_\_\_821\_5\_

194. LabelPSum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725

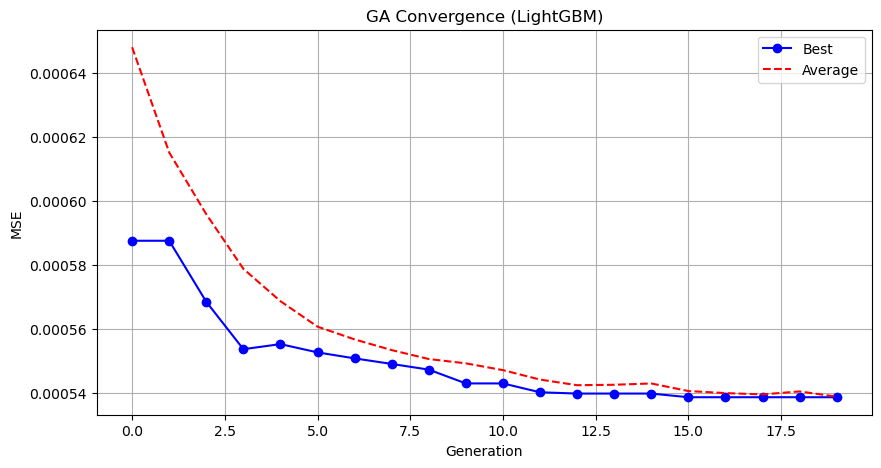
195. LabelPYEARS\_BEGINEXPLUATATION\_AVG

▶ Convergence progress:

- Initial MSE: 0.0006

- Final MSE: 0.0005

- Improvement: 8.3%



Genetic Algorithm completed successfully with MSE: 0.0005

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Running Particle Swarm Optimization with LightGBM...

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=== PARTICLE SWARM OPTIMIZATION ===

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[Initialization]

- Swarm size: 30 particles

- Iterations: 20

- Cognitive weight: 0.5

- Social weight: 0.5

- Inertia weight: 0.5

- Search space: 334 features

- Target: Minimize MSE using LightGBM

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=== OPTIMIZATION RESULTS ===

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▶ Best MSE achieved: 0.000583

▶ Time elapsed: 129.11 seconds

▶ Features selected: 167/334 (50.0% reduction)

▶ Selected features (with weights):

1. AMT\_CREDIT (weight: 1.000)

2. AMT\_GOODS\_PRICE (weight: 1.000)

3. DAYS\_BIRTH (weight: 0.801)

4. DEF\_30\_CNT\_SOCIAL\_CIRCLE (weight: 1.000)

5. EXT\_SOURCE\_1 (weight: 0.573)

6. EXT\_SOURCE\_2 (weight: 0.653)

7. FLAG\_DOCUMENT\_3 (weight: 0.570)

8. FLAG\_OWN\_CAR (weight: 0.651)

9. FLOORSMAX\_MODE (weight: 1.000)

10. LIVINGAPARTMENTS\_MEDI (weight: 1.000)

11. NAME\_EDUCATION\_TYPE (weight: 0.810)

12. ORGANIZATION\_TYPE (weight: 1.000)

13. REG\_CITY\_NOT\_LIVE\_CITY (weight: 0.557)

14. REG\_CITY\_NOT\_WORK\_CITY (weight: 0.549)

15. SK\_ID\_CURR (weight: 0.586)

16. YEARS\_BEGINEXPLUATATION\_AVG (weight: 0.945)

17. Count\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.614)

18. Count\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.666)

19. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.660)

20. CountDistinct\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_ (weight: 1.000)

21. CountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_ (weight: 0.790)

22. Max\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.783)

23. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.681)

24. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5 (weight: 1.000)

25. Max\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_ (weight: 0.698)

26. Max\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_8088\_8175 (weight: 0.643)

27. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_ (weight: 0.935)

28. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5 (weight: 0.627)

29. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_ (weight: 1.000)

30. Max\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_ (weight: 0.980)

31. Max\_previous\_application\_train\_csv\_CNT\_PAYMENT\_ (weight: 0.705)

32. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.513)

33. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_\_1897266 (weight: 0.783)

34. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266 (weight: 0.560)

35. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 1.000)

36. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225 (weight: 0.870)

37. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5 (weight: 0.795)

38. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 0.762)

39. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 1.000)

40. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.521)

41. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5 (weight: 0.849)

42. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.872)

43. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5 (weight: 0.762)

44. Mean\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.717)

45. Mean\_previous\_application\_train\_csv\_DAYS\_FIRST\_DRAWING\_ (weight: 0.582)

46. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 1.000)

47. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ (weight: 0.536)

48. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.732)

49. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 0.725)

50. Median\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_ (weight: 0.802)

51. Median\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5 (weight: 0.513)

52. Median\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.813)

53. Median\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_ (weight: 0.763)

54. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 1.000)

55. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225 (weight: 0.784)

56. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_TYPE\_\_\_Consumer\_credit (weight: 0.802)

57. Min\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 0.678)

58. Mode\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_ (weight: 0.680)

59. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.501)

60. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 1.000)

61. Mode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_ (weight: 0.784)

62. StdDev\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5 (weight: 1.000)

63. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 1.000)

64. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_ (weight: 0.816)

65. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.640)

66. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.558)

67. StdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_ (weight: 0.576)

68. StdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_ (weight: 0.683)

69. StdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 1.000)

70. Sum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.903)

71. Sum\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_SK\_DPD\_\_\_\_0\_5 (weight: 0.677)

72. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.956)

73. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit (weight: 0.524)

74. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.708)

75. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 1.000)

76. Sum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 0.867)

77. Sum\_bureau\_train\_csv\_DAYS\_ENDDATE\_FACT\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 1.000)

78. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit (weight: 0.861)

79. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_\_\_\_\_983\_5 (weight: 0.639)

80. Sum\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28 (weight: 0.522)

81. Sum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175 (weight: 0.543)

82. Sum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725 (weight: 0.600)

83. LabelPAMT\_ANNUITY (weight: 0.842)

84. LabelPCODE\_GENDER (weight: 1.000)

85. LabelPCount\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.632)

86. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.645)

87. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.618)

88. LabelPCountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_ (weight: 0.607)

89. LabelPCountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5 (weight: 0.511)

90. LabelPCountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225 (weight: 0.549)

91. LabelPDAYS\_BIRTH (weight: 0.539)

92. LabelPDAYS\_ID\_PUBLISH (weight: 0.944)

93. LabelPDEF\_30\_CNT\_SOCIAL\_CIRCLE (weight: 0.709)

94. LabelPDEF\_60\_CNT\_SOCIAL\_CIRCLE (weight: 0.612)

95. LabelPEXT\_SOURCE\_1 (weight: 0.803)

96. LabelPEXT\_SOURCE\_3 (weight: 0.918)

97. LabelPFLAG\_DOCUMENT\_3 (weight: 0.908)

98. LabelPFLAG\_OWN\_CAR (weight: 0.687)

99. LabelPFLOORSMAX\_MODE (weight: 1.000)

100. LabelPMax\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_\_\_\_7\_5 (weight: 0.642)

101. LabelPMax\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_SK\_DPD\_\_\_0\_5 (weight: 0.544)

102. LabelPMax\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.617)

103. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 1.000)

104. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.619)

105. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.678)

106. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.513)

107. LabelPMax\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_\_0\_0225 (weight: 0.909)

108. LabelPMax\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_CURRENT\_ (weight: 0.759)

109. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_ (weight: 1.000)

110. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5 (weight: 0.556)

111. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5 (weight: 0.696)

112. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266 (weight: 1.000)

113. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active (weight: 0.574)

114. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225 (weight: 0.881)

115. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_\_\_\_124731\_405 (weight: 0.796)

116. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675 (weight: 0.732)

117. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.949)

118. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.658)

119. LabelPMean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225 (weight: 0.986)

120. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5 (weight: 0.748)

121. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 1.000)

122. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.608)

123. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 1.000)

124. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 1.000)

125. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225 (weight: 0.968)

126. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ (weight: 0.779)

127. LabelPMedian\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5 (weight: 0.815)

128. LabelPMedian\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_ (weight: 0.861)

129. LabelPMedian\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.849)

130. LabelPMedian\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 1.000)

131. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_ (weight: 1.000)

132. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.993)

133. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225 (weight: 0.599)

134. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.533)

135. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_TYPE\_\_\_Consumer\_credit (weight: 0.867)

136. LabelPMin\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025 (weight: 1.000)

137. LabelPMin\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5 (weight: 1.000)

138. LabelPMode\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_ (weight: 1.000)

139. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 1.000)

140. LabelPMode\_bureau\_train\_csv\_CREDIT\_TYPE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.662)

141. LabelPMode\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_ (weight: 0.557)

142. LabelPNAME\_FAMILY\_STATUS (weight: 0.574)

143. LabelPOCCUPATION\_TYPE (weight: 0.591)

144. LabelPORGANIZATION\_TYPE (weight: 0.974)

145. LabelPOWN\_CAR\_AGE (weight: 0.505)

146. LabelPREGION\_RATING\_CLIENT (weight: 0.958)

147. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 1.000)

148. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_ (weight: 0.826)

149. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5 (weight: 0.855)

150. LabelPStdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 1.000)

151. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_ (weight: 0.599)

152. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_ (weight: 0.678)

153. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_ (weight: 0.768)

154. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_NUM\_INSTALMENT\_NUMBER\_\_\_8\_5 (weight: 0.671)

155. LabelPStdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 0.985)

156. LabelPSum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.959)

157. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.646)

158. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit (weight: 0.832)

159. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.683)

160. LabelPSum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 1.000)

161. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit (weight: 0.586)

162. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_\_\_\_\_983\_5 (weight: 1.000)

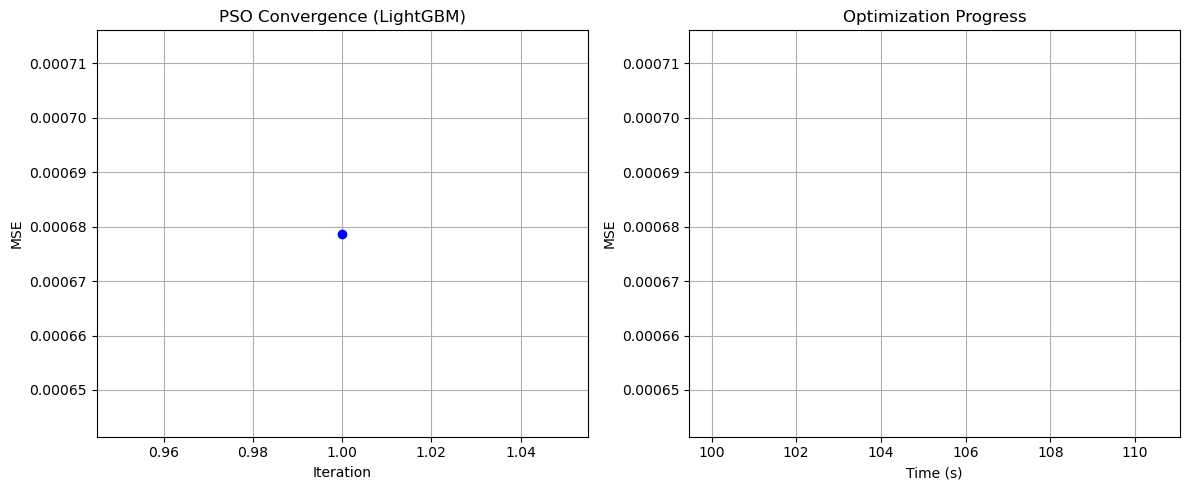
163. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.906)

164. LabelPSum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225 (weight: 0.530)

165. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_INSTALMENT\_in\_\_\_1654\_5\_\_\_821\_5\_ (weight: 0.965)

166. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.513)

167. LabelPSum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175 (weight: 0.806)



Particle Swarm Optimization completed successfully with MSE: 0.0006

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Running Whale Optimization with LightGBM...

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=== WHALE OPTIMIZATION ALGORITHM ===

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[Initialization]

- Population: 30 whales

- Max iterations: 20

- Spiral coefficient (b): 1.0

- Search space: 334 features

- Target: Minimize MSE using LightGBM

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=== OPTIMIZATION RESULTS ===

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▶ Best MSE achieved: 0.000525

▶ Time elapsed: 2356.27 seconds

▶ Features selected: 240/334 (28.1% reduction)

▶ Selected features:

1. AMT\_ANNUITY

2. AMT\_CREDIT

3. AMT\_GOODS\_PRICE

4. DEF\_60\_CNT\_SOCIAL\_CIRCLE

5. EXT\_SOURCE\_1

6. EXT\_SOURCE\_2

7. EXT\_SOURCE\_3

8. FLAG\_DOCUMENT\_3

9. FLAG\_EMP\_PHONE

10. FLAG\_OWN\_CAR

11. FLOORSMIN\_MEDI

12. LIVINGAPARTMENTS\_MEDI

13. LIVINGAREA\_AVG

14. NAME\_EDUCATION\_TYPE

15. ORGANIZATION\_TYPE

16. OWN\_CAR\_AGE

17. REGION\_POPULATION\_RELATIVE

18. REGION\_RATING\_CLIENT

19. REGION\_RATING\_CLIENT\_W\_CITY

20. REG\_CITY\_NOT\_WORK\_CITY

21. SK\_ID\_CURR

22. Count\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

23. Count\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

24. Count\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

25. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

26. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

27. CountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

28. CountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

29. CountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225

30. CountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

31. Max\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_SK\_DPD\_\_\_0\_5

32. Max\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

33. Max\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

34. Max\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

35. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

36. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

37. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5

38. Max\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_CURRENT\_

39. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

40. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

41. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5

42. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_

43. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

44. Max\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

45. Max\_previous\_application\_train\_csv\_CNT\_PAYMENT\_

46. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

47. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

48. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5

49. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

50. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_\_\_\_124731\_405

51. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

52. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675

53. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

54. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

55. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

56. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

57. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

58. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

59. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

60. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

61. Mean\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

62. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

63. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

64. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

65. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

66. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

67. Median\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

68. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_

69. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

70. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

71. Median\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5

72. Median\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

73. Median\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

74. Median\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

75. Median\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

76. Median\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

77. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

78. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225

79. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

80. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

81. Min\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

82. Min\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

83. Min\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_

84. Min\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

85. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

86. Mode\_bureau\_train\_csv\_CREDIT\_TYPE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

87. Mode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

88. Mode\_previous\_application\_train\_csv\_NAME\_SELLER\_INDUSTRY\_

89. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

90. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

91. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

92. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_

93. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

94. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

95. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

96. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

97. StdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

98. StdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

99. StdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

100. StdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

101. StdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5

102. StdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

103. Sum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

104. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

105. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

106. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

107. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

108. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

109. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

110. Sum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

111. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

112. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

113. Sum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225

114. Sum\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

115. Sum\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_INSTALMENT\_in\_\_\_1654\_5\_\_\_821\_5\_

116. Sum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175

117. LabelPAMT\_ANNUITY

118. LabelPAMT\_CREDIT

119. LabelPAMT\_GOODS\_PRICE

120. LabelPCODE\_GENDER

121. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

122. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

123. LabelPCount\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

124. LabelPCount\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

125. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

126. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

127. LabelPCountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

128. LabelPCountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

129. LabelPCountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225

130. LabelPCountDistinct\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

131. LabelPDAYS\_BIRTH

132. LabelPDAYS\_EMPLOYED

133. LabelPDAYS\_ID\_PUBLISH

134. LabelPDEF\_30\_CNT\_SOCIAL\_CIRCLE

135. LabelPDEF\_60\_CNT\_SOCIAL\_CIRCLE

136. LabelPEXT\_SOURCE\_1

137. LabelPEXT\_SOURCE\_2

138. LabelPEXT\_SOURCE\_3

139. LabelPFLOORSMAX\_MODE

140. LabelPFLOORSMIN\_MEDI

141. LabelPLIVINGAPARTMENTS\_MEDI

142. LabelPMax\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

143. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

144. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

145. LabelPMax\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

146. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

147. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

148. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5

149. LabelPMax\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_\_0\_0225

150. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_

151. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_8088\_8175

152. LabelPMax\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5

153. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

154. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

155. LabelPMax\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

156. LabelPMax\_previous\_application\_train\_csv\_CNT\_PAYMENT\_

157. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

158. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_\_1897266

159. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

160. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

161. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active

162. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225

163. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5

164. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

165. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_\_\_\_124731\_405

166. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

167. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

168. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

169. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

170. LabelPMean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225

171. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

172. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

173. LabelPMean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

174. LabelPMean\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

175. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

176. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

177. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

178. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

179. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

180. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

181. LabelPMedian\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5

182. LabelPMedian\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

183. LabelPMedian\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

184. LabelPMedian\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

185. LabelPMedian\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

186. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_

187. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

188. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

189. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225

190. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

191. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

192. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_TYPE\_\_\_Consumer\_credit

193. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

194. LabelPMin\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

195. LabelPMin\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

196. LabelPMin\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

197. LabelPMin\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_

198. LabelPMode\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

199. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

200. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

201. LabelPMode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

202. LabelPNAME\_CONTRACT\_TYPE

203. LabelPNAME\_EDUCATION\_TYPE

204. LabelPNAME\_FAMILY\_STATUS

205. LabelPNAME\_INCOME\_TYPE

206. LabelPOCCUPATION\_TYPE

207. LabelPORGANIZATION\_TYPE

208. LabelPOWN\_CAR\_AGE

209. LabelPREGION\_POPULATION\_RELATIVE

210. LabelPREGION\_RATING\_CLIENT

211. LabelPREGION\_RATING\_CLIENT\_W\_CITY

212. LabelPREG\_CITY\_NOT\_WORK\_CITY

213. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

214. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

215. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

216. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

217. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

218. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

219. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

220. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

221. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

222. LabelPStdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

223. LabelPStdDev\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_ATM\_CURRENT\_

224. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

225. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

226. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_NUM\_INSTALMENT\_NUMBER\_\_\_8\_5

227. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5

228. LabelPSum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

229. LabelPSum\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_SK\_DPD\_\_\_\_0\_5

230. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

231. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

232. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

233. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

234. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

235. LabelPSum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

236. LabelPSum\_bureau\_train\_csv\_DAYS\_ENDDATE\_FACT\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

237. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

238. LabelPSum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225

239. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

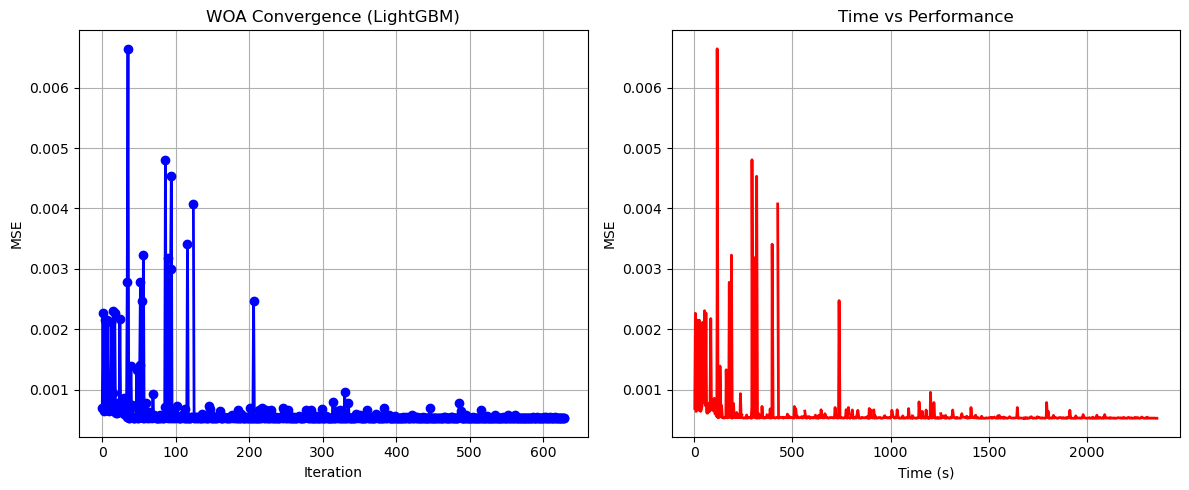
240. LabelPSum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725

▶ Convergence progress:

- Initial MSE: 0.0007

- Final MSE: 0.0005

- Improvement: 23.7%



Whale Optimization completed successfully with MSE: 0.0005

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Running Squid Game Optimizer with LightGBM...

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=== SQUID GAME OPTIMIZER (SGO) ===

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[Initialization]

- Players: 30 (15 offensive, 15 defensive)

- Max games: 20

- Search space: 334 features

- Target: Minimize MSE using LightGBM

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=== OPTIMIZATION RESULTS ===

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▶ Best MSE achieved: 0.000571

▶ Time elapsed: 2074.62 seconds

▶ Features selected: 160/334 (52.1% reduction)

▶ Selected features:

1. AMT\_ANNUITY

2. AMT\_GOODS\_PRICE

3. CODE\_GENDER

4. DAYS\_ID\_PUBLISH

5. DEF\_30\_CNT\_SOCIAL\_CIRCLE

6. EXT\_SOURCE\_1

7. EXT\_SOURCE\_2

8. EXT\_SOURCE\_3

9. FLAG\_OWN\_CAR

10. FLOORSMIN\_MEDI

11. LIVINGAPARTMENTS\_MEDI

12. NAME\_EDUCATION\_TYPE

13. REGION\_POPULATION\_RELATIVE

14. REGION\_RATING\_CLIENT\_W\_CITY

15. REG\_CITY\_NOT\_LIVE\_CITY

16. TARGET

17. YEARS\_BEGINEXPLUATATION\_AVG

18. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

19. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

20. CountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

21. CountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225

22. CountDistinct\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

23. CountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

24. Max\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_\_\_\_7\_5

25. Max\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

26. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

27. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

28. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5

29. Max\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_CURRENT\_

30. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_

31. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

32. Max\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

33. Max\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

34. Max\_previous\_application\_train\_csv\_CNT\_PAYMENT\_

35. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

36. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

37. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active

38. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225

39. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

40. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

41. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

42. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

43. Mean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225

44. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

45. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

46. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

47. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

48. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

49. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

50. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_

51. Median\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

52. Median\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

53. Median\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

54. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

55. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225

56. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

57. Min\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

58. Min\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

59. Min\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

60. Min\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_

61. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

62. Mode\_previous\_application\_train\_csv\_NAME\_SELLER\_INDUSTRY\_

63. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

64. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

65. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_

66. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

67. StdDev\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_ATM\_CURRENT\_

68. StdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

69. StdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

70. StdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

71. Sum\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_SK\_DPD\_\_\_\_0\_5

72. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

73. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

74. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

75. Sum\_bureau\_train\_csv\_DAYS\_ENDDATE\_FACT\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

76. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_\_\_\_\_983\_5

77. Sum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175

78. Sum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725

79. LabelPAMT\_GOODS\_PRICE

80. LabelPCount\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

81. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

82. LabelPCountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225

83. LabelPCountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

84. LabelPDAYS\_BIRTH

85. LabelPDAYS\_EMPLOYED

86. LabelPDAYS\_ID\_PUBLISH

87. LabelPDEF\_60\_CNT\_SOCIAL\_CIRCLE

88. LabelPEXT\_SOURCE\_1

89. LabelPEXT\_SOURCE\_2

90. LabelPFLAG\_DOCUMENT\_3

91. LabelPFLAG\_EMP\_PHONE

92. LabelPFLOORSMIN\_MEDI

93. LabelPLIVINGAPARTMENTS\_MEDI

94. LabelPMax\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_SK\_DPD\_\_\_0\_5

95. LabelPMax\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

96. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

97. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

98. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

99. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

100. LabelPMax\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_\_0\_0225

101. LabelPMax\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_CURRENT\_

102. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_

103. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_8088\_8175

104. LabelPMax\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

105. LabelPMax\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5

106. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_

107. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

108. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

109. LabelPMax\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

110. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

111. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

112. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675

113. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

114. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

115. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

116. LabelPMean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

117. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

118. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

119. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

120. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

121. LabelPMedian\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5

122. LabelPMedian\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

123. LabelPMedian\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

124. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_

125. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

126. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

127. LabelPMin\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

128. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

129. LabelPMode\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

130. LabelPMode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

131. LabelPNAME\_CONTRACT\_TYPE

132. LabelPOCCUPATION\_TYPE

133. LabelPORGANIZATION\_TYPE

134. LabelPOWN\_CAR\_AGE

135. LabelPREGION\_POPULATION\_RELATIVE

136. LabelPREGION\_RATING\_CLIENT

137. LabelPREGION\_RATING\_CLIENT\_W\_CITY

138. LabelPREG\_CITY\_NOT\_WORK\_CITY

139. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

140. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

141. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

142. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

143. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_

144. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

145. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

146. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

147. LabelPStdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

148. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

149. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

150. LabelPStdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

151. LabelPSum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

152. LabelPSum\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_SK\_DPD\_\_\_\_0\_5

153. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

154. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

155. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

156. LabelPSum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

157. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

158. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_\_\_\_\_983\_5

159. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

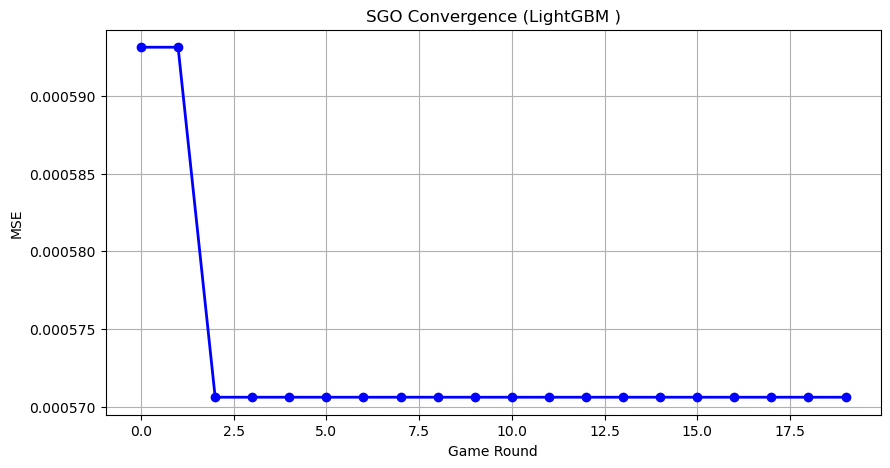
160. LabelPYEARS\_BEGINEXPLUATATION\_AVG

▶ Convergence progress:

- Initial MSE: 0.0006

- Final MSE: 0.0006

- Improvement: 3.8%



Squid Game Optimizer completed successfully with MSE: 0.0006

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Running PSH-Hyptrite with LightGBM...

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=== PSH-HYPTRITE OPTIMIZATION ===

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[Initialization]

- Search points: 30

- Max iterations: 20

- Initial radius: 0.5 (adaptive)

- Hypersphere samples: 3 per point

- Search space: 334 features

- Target: Minimize MSE using LightGBM

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=== OPTIMIZATION RESULTS ===

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▶ Best MSE achieved: 0.000553

▶ Time elapsed: 6435.92 seconds

▶ Features selected: 186/334 (44.3% reduction)

▶ Selected features (with weights):

1. DAYS\_EMPLOYED (weight: 0.865)

2. DEF\_30\_CNT\_SOCIAL\_CIRCLE (weight: 0.792)

3. DEF\_60\_CNT\_SOCIAL\_CIRCLE (weight: 0.943)

4. EXT\_SOURCE\_1 (weight: 0.769)

5. EXT\_SOURCE\_2 (weight: 0.781)

6. EXT\_SOURCE\_3 (weight: 0.649)

7. FLAG\_DOCUMENT\_3 (weight: 0.506)

8. FLAG\_OWN\_CAR (weight: 0.763)

9. LIVINGAPARTMENTS\_MEDI (weight: 0.508)

10. NAME\_EDUCATION\_TYPE (weight: 0.760)

11. NAME\_FAMILY\_STATUS (weight: 0.650)

12. OCCUPATION\_TYPE (weight: 0.805)

13. ORGANIZATION\_TYPE (weight: 0.937)

14. OWN\_CAR\_AGE (weight: 0.896)

15. REGION\_POPULATION\_RELATIVE (weight: 0.644)

16. REG\_CITY\_NOT\_LIVE\_CITY (weight: 0.556)

17. SK\_ID\_CURR (weight: 0.980)

18. TARGET (weight: 0.955)

19. YEARS\_BEGINEXPLUATATION\_AVG (weight: 0.662)

20. Count\_POS\_CASH\_balance\_train\_csv\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 0.858)

21. Count\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.833)

22. Count\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.686)

23. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.779)

24. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.531)

25. CountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225 (weight: 0.946)

26. CountDistinct\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_ (weight: 0.795)

27. CountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_ (weight: 0.527)

28. Max\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_\_\_\_7\_5 (weight: 0.563)

29. Max\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_SK\_DPD\_\_\_0\_5 (weight: 0.629)

30. Max\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.764)

31. Max\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.507)

32. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.542)

33. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.642)

34. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_ (weight: 0.917)

35. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5 (weight: 0.949)

36. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_ (weight: 0.686)

37. Max\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5 (weight: 0.730)

38. Max\_previous\_application\_train\_csv\_CNT\_PAYMENT\_ (weight: 0.509)

39. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_\_1897266 (weight: 0.914)

40. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266 (weight: 0.661)

41. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active (weight: 0.909)

42. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225 (weight: 0.522)

43. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675 (weight: 0.873)

44. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.559)

45. Mean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225 (weight: 0.532)

46. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025 (weight: 0.710)

47. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5 (weight: 0.545)

48. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5 (weight: 0.801)

49. Mean\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.914)

50. Mean\_previous\_application\_train\_csv\_DAYS\_FIRST\_DRAWING\_ (weight: 0.764)

51. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.845)

52. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 0.750)

53. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.980)

54. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ (weight: 0.912)

55. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.791)

56. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.883)

57. Median\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5 (weight: 0.806)

58. Median\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5 (weight: 0.505)

59. Median\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.698)

60. Median\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_ (weight: 0.614)

61. Median\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 0.632)

62. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.700)

63. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.602)

64. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.735)

65. Min\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_ (weight: 0.574)

66. Min\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5 (weight: 0.774)

67. Min\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_ (weight: 0.904)

68. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.659)

69. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.935)

70. Mode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_ (weight: 0.995)

71. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 0.626)

72. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5 (weight: 0.703)

73. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_ (weight: 0.501)

74. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.779)

75. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 0.788)

76. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.871)

77. StdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.875)

78. StdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_ (weight: 0.763)

79. StdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5 (weight: 0.792)

80. StdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 0.593)

81. Sum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.727)

82. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 0.904)

83. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.540)

84. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.887)

85. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_\_\_\_\_983\_5 (weight: 0.813)

86. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.916)

87. Sum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225 (weight: 0.586)

88. Sum\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_INSTALMENT\_in\_\_\_1654\_5\_\_\_821\_5\_ (weight: 0.753)

89. Sum\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45 (weight: 0.970)

90. Sum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725 (weight: 0.885)

91. LabelPAMT\_ANNUITY (weight: 0.629)

92. LabelPAMT\_CREDIT (weight: 0.653)

93. LabelPAMT\_GOODS\_PRICE (weight: 0.601)

94. LabelPCODE\_GENDER (weight: 0.841)

95. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.665)

96. LabelPCount\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.922)

97. LabelPCountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_ (weight: 0.523)

98. LabelPDAYS\_BIRTH (weight: 0.562)

99. LabelPDAYS\_EMPLOYED (weight: 0.890)

100. LabelPEXT\_SOURCE\_1 (weight: 0.863)

101. LabelPEXT\_SOURCE\_2 (weight: 0.690)

102. LabelPEXT\_SOURCE\_3 (weight: 0.582)

103. LabelPFLAG\_DOCUMENT\_3 (weight: 0.663)

104. LabelPFLAG\_EMP\_PHONE (weight: 0.910)

105. LabelPFLOORSMIN\_MEDI (weight: 0.901)

106. LabelPLIVINGAREA\_AVG (weight: 0.748)

107. LabelPMax\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.677)

108. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.540)

109. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.632)

110. LabelPMax\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225 (weight: 0.655)

111. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.554)

112. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_ (weight: 0.744)

113. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_8088\_8175 (weight: 0.534)

114. LabelPMax\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5 (weight: 0.942)

115. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_ (weight: 0.767)

116. LabelPMax\_previous\_application\_train\_csv\_CNT\_PAYMENT\_ (weight: 0.996)

117. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5 (weight: 0.767)

118. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_\_1897266 (weight: 0.990)

119. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266 (weight: 0.821)

120. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.507)

121. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active (weight: 0.749)

122. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.774)

123. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 0.521)

124. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.554)

125. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.959)

126. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.619)

127. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.700)

128. LabelPMean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225 (weight: 0.788)

129. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025 (weight: 0.782)

130. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5 (weight: 0.982)

131. LabelPMean\_previous\_application\_train\_csv\_DAYS\_FIRST\_DRAWING\_ (weight: 0.914)

132. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.537)

133. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5 (weight: 0.921)

134. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5 (weight: 0.725)

135. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 0.931)

136. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5 (weight: 0.748)

137. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.996)

138. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 0.875)

139. LabelPMedian\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5 (weight: 0.924)

140. LabelPMedian\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_ (weight: 0.559)

141. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_ (weight: 0.535)

142. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.930)

143. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225 (weight: 0.529)

144. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed (weight: 0.604)

145. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_TYPE\_\_\_Consumer\_credit (weight: 0.761)

146. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.588)

147. LabelPMin\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025 (weight: 0.745)

148. LabelPMin\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5 (weight: 0.946)

149. LabelPMode\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_ (weight: 0.848)

150. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1 (weight: 0.959)

151. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.995)

152. LabelPMode\_bureau\_train\_csv\_CREDIT\_TYPE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.545)

153. LabelPMode\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_ (weight: 0.619)

154. LabelPMode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_ (weight: 0.796)

155. LabelPNAME\_CONTRACT\_TYPE (weight: 0.816)

156. LabelPNAME\_INCOME\_TYPE (weight: 0.570)

157. LabelPOCCUPATION\_TYPE (weight: 0.650)

158. LabelPREGION\_POPULATION\_RELATIVE (weight: 0.997)

159. LabelPREG\_CITY\_NOT\_LIVE\_CITY (weight: 0.632)

160. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 0.981)

161. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5 (weight: 0.527)

162. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_ (weight: 0.772)

163. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_ (weight: 0.694)

164. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_ (weight: 0.911)

165. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5 (weight: 0.705)

166. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 0.621)

167. LabelPStdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.543)

168. LabelPStdDev\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_ATM\_CURRENT\_ (weight: 0.507)

169. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28 (weight: 0.593)

170. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_ (weight: 0.604)

171. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_ (weight: 0.523)

172. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_NUM\_INSTALMENT\_NUMBER\_\_\_8\_5 (weight: 0.578)

173. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5 (weight: 0.993)

174. LabelPStdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_ (weight: 0.715)

175. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675 (weight: 0.867)

176. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.693)

177. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit (weight: 0.972)

178. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405 (weight: 0.685)

179. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5 (weight: 0.612)

180. LabelPSum\_bureau\_train\_csv\_DAYS\_ENDDATE\_FACT\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5 (weight: 0.532)

181. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5 (weight: 0.688)

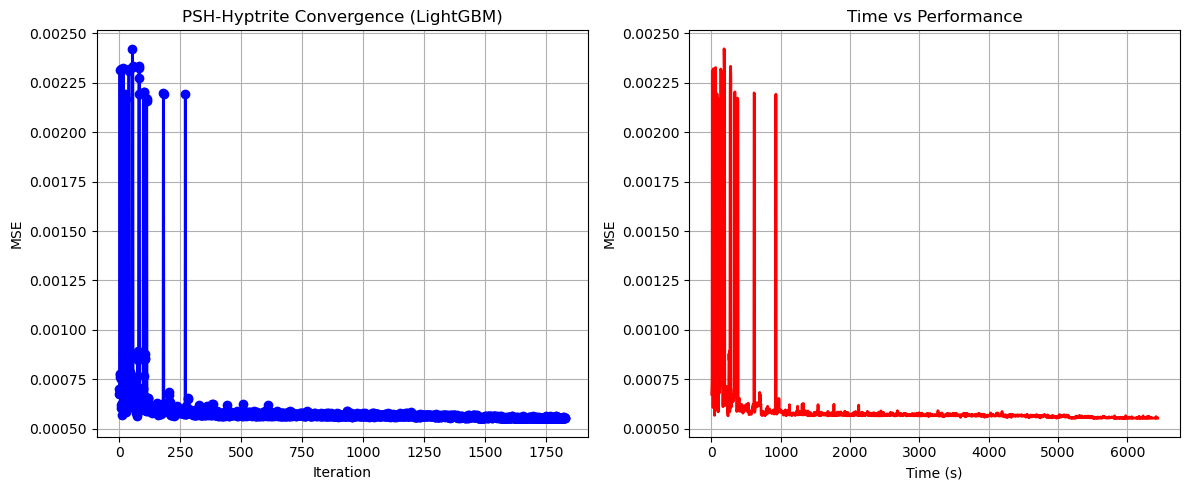
182. LabelPSum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225 (weight: 0.831)

183. LabelPSum\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28 (weight: 0.994)

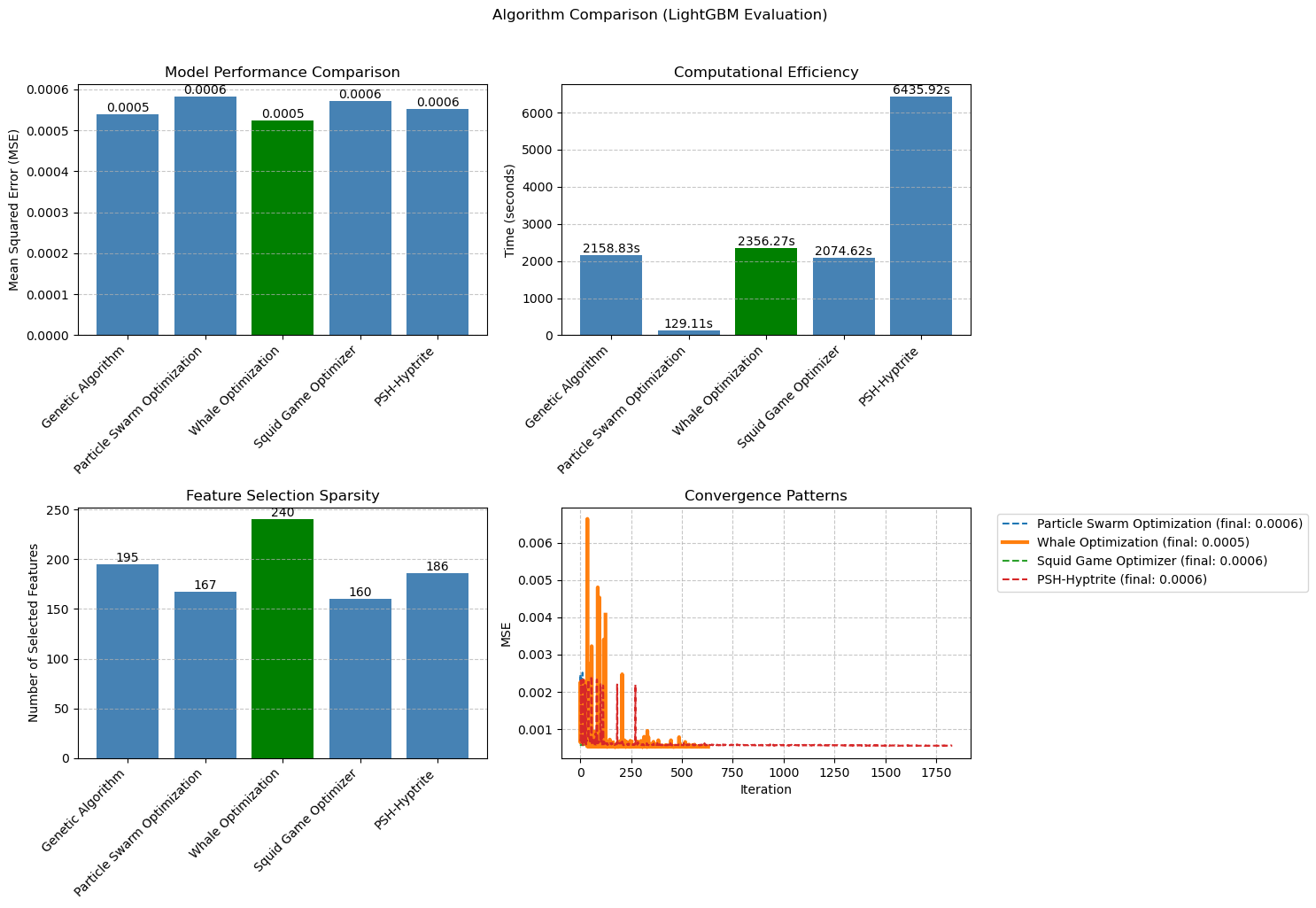
184. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_INSTALMENT\_in\_\_\_1654\_5\_\_\_821\_5\_ (weight: 0.547)

185. LabelPSum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175 (weight: 0.556)

186. LabelPSum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725 (weight: 0.719)



PSH-Hyptrite completed successfully with MSE: 0.0006



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=== FINAL FEATURE SELECTION RESULTS USING LightGBM ===

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🏆 BEST ALGORITHM: WHALE OPTIMIZATION

• MSE: 0.000525

• Time: 2356.27 seconds

• Features: 240/334 (28.1% reduction)

📊 COMPARISON TABLE:

Algorithm MSE Time (s) Features

---------------------------------------------------------------------------

Whale Optimization 0.000525 2356.27 240

Genetic Algorithm 0.000539 2158.83 195

PSH-Hyptrite 0.000553 6435.92 186

Squid Game Optimizer 0.000571 2074.62 160

Particle Swarm Optimization 0.000583 129.11 167

🔍 SELECTED FEATURES:

1. AMT\_ANNUITY

2. AMT\_CREDIT

3. AMT\_GOODS\_PRICE

4. DEF\_60\_CNT\_SOCIAL\_CIRCLE

5. EXT\_SOURCE\_1

6. EXT\_SOURCE\_2

7. EXT\_SOURCE\_3

8. FLAG\_DOCUMENT\_3

9. FLAG\_EMP\_PHONE

10. FLAG\_OWN\_CAR

11. FLOORSMIN\_MEDI

12. LIVINGAPARTMENTS\_MEDI

13. LIVINGAREA\_AVG

14. NAME\_EDUCATION\_TYPE

15. ORGANIZATION\_TYPE

16. OWN\_CAR\_AGE

17. REGION\_POPULATION\_RELATIVE

18. REGION\_RATING\_CLIENT

19. REGION\_RATING\_CLIENT\_W\_CITY

20. REG\_CITY\_NOT\_WORK\_CITY

21. SK\_ID\_CURR

22. Count\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

23. Count\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

24. Count\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

25. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

26. Count\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

27. CountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

28. CountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

29. CountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225

30. CountDistinct\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

31. Max\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_SK\_DPD\_\_\_0\_5

32. Max\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

33. Max\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

34. Max\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

35. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

36. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

37. Max\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5

38. Max\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_CURRENT\_

39. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

40. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

41. Max\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5

42. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_

43. Max\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

44. Max\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

45. Max\_previous\_application\_train\_csv\_CNT\_PAYMENT\_

46. Mean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

47. Mean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

48. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5

49. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

50. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_\_\_\_124731\_405

51. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

52. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_\_0\_0675

53. Mean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

54. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

55. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

56. Mean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

57. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

58. Mean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

59. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

60. Mean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

61. Mean\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

62. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

63. Median\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

64. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

65. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

66. Median\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

67. Median\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

68. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_

69. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

70. Median\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

71. Median\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5

72. Median\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

73. Median\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

74. Median\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

75. Median\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

76. Median\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

77. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

78. Min\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225

79. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

80. Min\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

81. Min\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

82. Min\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

83. Min\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_

84. Min\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

85. Mode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

86. Mode\_bureau\_train\_csv\_CREDIT\_TYPE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

87. Mode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

88. Mode\_previous\_application\_train\_csv\_NAME\_SELLER\_INDUSTRY\_

89. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

90. StdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

91. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

92. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_

93. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

94. StdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

95. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

96. StdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

97. StdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

98. StdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

99. StdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

100. StdDev\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

101. StdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5

102. StdDev\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

103. Sum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

104. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

105. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

106. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

107. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

108. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

109. Sum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

110. Sum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

111. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

112. Sum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

113. Sum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225

114. Sum\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_15929\_28

115. Sum\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_INSTALMENT\_in\_\_\_1654\_5\_\_\_821\_5\_

116. Sum\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_8088\_8175

117. LabelPAMT\_ANNUITY

118. LabelPAMT\_CREDIT

119. LabelPAMT\_GOODS\_PRICE

120. LabelPCODE\_GENDER

121. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

122. LabelPCount\_POS\_CASH\_balance\_train\_csv\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

123. LabelPCount\_bureau\_train\_csv\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

124. LabelPCount\_bureau\_train\_csv\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

125. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

126. LabelPCount\_bureau\_train\_csv\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

127. LabelPCountDistinct\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

128. LabelPCountDistinct\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

129. LabelPCountDistinct\_credit\_card\_balance\_train\_csv\_NAME\_CONTRACT\_STATUS\_\_where\_AMT\_RECIVABLE\_\_\_0\_0225

130. LabelPCountDistinct\_previous\_application\_train\_csv\_CODE\_REJECT\_REASON\_

131. LabelPDAYS\_BIRTH

132. LabelPDAYS\_EMPLOYED

133. LabelPDAYS\_ID\_PUBLISH

134. LabelPDEF\_30\_CNT\_SOCIAL\_CIRCLE

135. LabelPDEF\_60\_CNT\_SOCIAL\_CIRCLE

136. LabelPEXT\_SOURCE\_1

137. LabelPEXT\_SOURCE\_2

138. LabelPEXT\_SOURCE\_3

139. LabelPFLOORSMAX\_MODE

140. LabelPFLOORSMIN\_MEDI

141. LabelPLIVINGAPARTMENTS\_MEDI

142. LabelPMax\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

143. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

144. LabelPMax\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

145. LabelPMax\_bureau\_train\_csv\_CREDIT\_DAY\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

146. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

147. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

148. LabelPMax\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_0\_5

149. LabelPMax\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_\_0\_0225

150. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_

151. LabelPMax\_installments\_payments\_train\_csv\_AMT\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_8088\_8175

152. LabelPMax\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_SK\_ID\_PREV\_\_\_\_1897795\_5

153. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

154. LabelPMax\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

155. LabelPMax\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

156. LabelPMax\_previous\_application\_train\_csv\_CNT\_PAYMENT\_

157. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

158. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_\_1897266

159. LabelPMean\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_SK\_ID\_PREV\_\_\_1897266

160. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

161. LabelPMean\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_NAME\_CONTRACT\_STATUS\_\_\_Active

162. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_\_0\_0225

163. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CREDIT\_DAY\_OVERDUE\_\_\_\_0\_5

164. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

165. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_\_\_\_124731\_405

166. LabelPMean\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

167. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

168. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_\_\_\_983\_5

169. LabelPMean\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

170. LabelPMean\_credit\_card\_balance\_train\_csv\_AMT\_CREDIT\_LIMIT\_ACTUAL\_\_where\_AMT\_BALANCE\_\_\_\_0\_0225

171. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

172. LabelPMean\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_\_1\_5

173. LabelPMean\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_369\_5

174. LabelPMean\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

175. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

176. LabelPMedian\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_12\_5

177. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

178. LabelPMedian\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_AMT\_CREDIT\_SUM\_OVERDUE\_\_\_0\_0225

179. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

180. LabelPMedian\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

181. LabelPMedian\_credit\_card\_balance\_train\_csv\_AMT\_RECIVABLE\_\_where\_SK\_DPD\_DEF\_\_\_\_0\_5

182. LabelPMedian\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_NUM\_INSTALMENT\_VERSION\_in\_\_0\_5\_\_1\_5\_

183. LabelPMedian\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_1663\_5

184. LabelPMedian\_previous\_application\_train\_csv\_AMT\_DOWN\_PAYMENT\_

185. LabelPMedian\_previous\_application\_train\_csv\_RATE\_DOWN\_PAYMENT\_

186. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_

187. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

188. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

189. LabelPMin\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_LIMIT\_\_\_0\_0225

190. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

191. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

192. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_CREDIT\_TYPE\_\_\_Consumer\_credit

193. LabelPMin\_bureau\_train\_csv\_DAYS\_CREDIT\_UPDATE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

194. LabelPMin\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_OTHER\_CURRENT\_

195. LabelPMin\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_\_\_8783\_3025

196. LabelPMin\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_DAYS\_ENTRY\_PAYMENT\_\_\_\_\_830\_5

197. LabelPMin\_previous\_application\_train\_csv\_HOUR\_APPR\_PROCESS\_START\_

198. LabelPMode\_bureau\_balance\_preprocessed\_train\_csv\_STATUS\_\_where\_STATUS\_not\_in\_\_C\_\_0\_\_X\_

199. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_CREDIT\_CURRENCY\_\_\_currency\_1

200. LabelPMode\_bureau\_train\_csv\_CREDIT\_ACTIVE\_\_where\_DAYS\_CREDIT\_ENDDATE\_\_\_\_426\_5

201. LabelPMode\_previous\_application\_train\_csv\_NAME\_CONTRACT\_STATUS\_

202. LabelPNAME\_CONTRACT\_TYPE

203. LabelPNAME\_EDUCATION\_TYPE

204. LabelPNAME\_FAMILY\_STATUS

205. LabelPNAME\_INCOME\_TYPE

206. LabelPOCCUPATION\_TYPE

207. LabelPORGANIZATION\_TYPE

208. LabelPOWN\_CAR\_AGE

209. LabelPREGION\_POPULATION\_RELATIVE

210. LabelPREGION\_RATING\_CLIENT

211. LabelPREGION\_RATING\_CLIENT\_W\_CITY

212. LabelPREG\_CITY\_NOT\_WORK\_CITY

213. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_CNT\_INSTALMENT\_FUTURE\_\_where\_MONTHS\_BALANCE\_\_\_\_27\_5

214. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_3\_5\_\_7\_5\_

215. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_MONTHS\_BALANCE\_\_\_\_\_27\_5

216. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_\_where\_CNT\_INSTALMENT\_\_\_\_12\_5

217. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_DPD\_DEF\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

218. LabelPStdDev\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_CNT\_INSTALMENT\_FUTURE\_in\_\_7\_5\_\_13\_5\_

219. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_DAYS\_ENDDATE\_FACT\_\_\_\_\_1678\_5

220. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

221. LabelPStdDev\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

222. LabelPStdDev\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

223. LabelPStdDev\_credit\_card\_balance\_train\_csv\_AMT\_DRAWINGS\_ATM\_CURRENT\_

224. LabelPStdDev\_installments\_payments\_train\_csv\_AMT\_PAYMENT\_\_where\_AMT\_INSTALMENT\_in\_\_8783\_3025\_\_16549\_6725\_

225. LabelPStdDev\_installments\_payments\_train\_csv\_DAYS\_ENTRY\_PAYMENT\_\_where\_AMT\_PAYMENT\_in\_\_8088\_8175\_\_15929\_28\_

226. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_NUMBER\_\_where\_NUM\_INSTALMENT\_NUMBER\_\_\_8\_5

227. LabelPStdDev\_installments\_payments\_train\_csv\_NUM\_INSTALMENT\_VERSION\_\_where\_NUM\_INSTALMENT\_VERSION\_\_\_1\_5

228. LabelPSum\_POS\_CASH\_balance\_train\_csv\_MONTHS\_BALANCE\_\_where\_CNT\_INSTALMENT\_\_\_24\_5

229. LabelPSum\_POS\_CASH\_balance\_train\_csv\_SK\_ID\_PREV\_\_where\_SK\_DPD\_\_\_\_0\_5

230. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_MAX\_OVERDUE\_\_where\_AMT\_CREDIT\_SUM\_DEBT\_\_\_0\_0675

231. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_DEBT\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

232. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

233. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_LIMIT\_\_where\_DAYS\_CREDIT\_UPDATE\_\_\_\_403\_5

234. LabelPSum\_bureau\_train\_csv\_AMT\_CREDIT\_SUM\_OVERDUE\_\_where\_CREDIT\_ACTIVE\_\_\_\_Closed

235. LabelPSum\_bureau\_train\_csv\_DAYS\_CREDIT\_ENDDATE\_\_where\_AMT\_CREDIT\_SUM\_\_\_124731\_405

236. LabelPSum\_bureau\_train\_csv\_DAYS\_ENDDATE\_FACT\_\_where\_CNT\_CREDIT\_PROLONG\_\_\_\_0\_5

237. LabelPSum\_bureau\_train\_csv\_SK\_ID\_BUREAU\_\_where\_CREDIT\_TYPE\_\_\_\_Consumer\_credit

238. LabelPSum\_credit\_card\_balance\_train\_csv\_CNT\_DRAWINGS\_ATM\_CURRENT\_\_where\_AMT\_INST\_MIN\_REGULARITY\_\_\_0\_0225

239. LabelPSum\_installments\_payments\_train\_csv\_DAYS\_INSTALMENT\_\_where\_AMT\_PAYMENT\_\_\_\_3375\_45

240. LabelPSum\_installments\_payments\_train\_csv\_SK\_ID\_PREV\_\_where\_AMT\_INSTALMENT\_\_\_16549\_6725

💡 Tip: Consider feature importance from LightGBM for further analysis