Why

Consider predicting which Arabic numeral is represented by a digital image.

Definition

Consider a *training dataset* which consists of 28 by 28 grayscale images paired with an Arabic numeral (an element of the set $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$

Handwritten Digit Classifiers

Digital Images

Bit Strings

Arrays   Natural Powers   Codes

Dot-Dash Code   Classifiers

Flash Code   Factorials

Natural Products   Alphabets   Sequences   Predictors

Natural Sums   Lists

Set Numbers   Direct Products

Recursion Theorem   Finite Sets

Equivalent Sets

Natural Order   Family Unions and Intersections   Function Inverses

Peano Axioms   Families   Function Composites   Function Images

Equivalence Relations   Functions

Natural Induction   Relations

Set Products

Natural Numbers   Generalized Set Dualities   Set Powers

Set Dualities   Set Unions and Intersections   Successor Sets   Intersection of Empty Set   Unordered Triples   Partitions

Set Complements   Pair Unions   Set Intersections   Ordered Pairs

Set Differences   Pair Intersections   Set Unions

Empty Set   Unordered Pairs

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities   Sets

Names

Letters   Objects