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1 import numpy as np
2 import operator as op
3 from abc import ABCMeta
4 from core import Node, Setter, getval, zeros_like
5
6 ✓ class NumericNode(Node):
7     __array_priority__ = 100.0 # Ensure precedence of Node's __rmul__ over
numpy's __mul__
8     __metaclass__ = ABCMeta
9     def __add__(self, other): return op.add(self, other)
10    def __radd__(self, other): return op.add(self, other)
11    def __sub__(self, other): return op.sub(self, other)
12    def __rsub__(self, other): return op.sub(other, self)
13    def __mul__(self, other): return op.mul(self, other)
14    def __rmul__(self, other): return op.mul(other, self)
15    def __neg__(self): return op.neg(self)
16    def __pow__(self, power): return op.pow(self, power)
17    def __rpow__(self, power): return op.pow(power, self)
18    def __div__(self, other): return op.div(self, other)
19    def __rdiv__(self, other): return op.div(other, self)
20    def __lt__(self, other): return getval(self) < getval(other)
21    def __gt__(self, other): return getval(self) > getval(other)
22
23    class FloatNode(NumericNode):
24        _value_types = [float, np.float64]
25        def zeros(self):
26            return 0.0
27
28 ✓ class ArrayNode(NumericNode):
29     _value_types = [np.ndarray]
30     def zeros(self):
31         return np.zeros(self.shape)
32     def reshape(self, shape, order=None):

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33         return np.reshape(self, shape, order=order)
34     def ravel(self, order=None):
35         return np.ravel(self, order=order)
36     def squeeze(self, axis=None):
37         return np.squeeze(self, axis=axis)
38     @property
39     def T(self): return np.transpose(self)
40     @property
41     def shape(self): return self.value.shape
42     @property
43     def ndim(self): return self.value.ndim
44     @property
45     def size(self): return self.value.size
46
47     class DictNode(Node):
48         _value_types = [dict]
49         def zeros(self):
50             return {k : zeros_like(v) for k, v in getval(self).iteritems()}
51
52     class ListNode(Node):
53         _value_types = [list]
54         def zeros(self):
55             return [zeros_like(v) for v in getval(self)]
56
57         def __len__(self): return len(self.value)
58
59     class SetterNode(Node):
60         _value_types = [Setter]
61         def zeros(self):
62             raise Exception("Shouldn't get zeros of setter")
63
64     node_types = [FloatNode, ArrayNode, DictNode, ListNode, SetterNode]
65     type_mappings = {}
66     for node_type in node_types:
67         type_mappings[node_type] = node_type
68         for value_type in node_type._value_types:
69             type_mappings[value_type] = node_type

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