

Appendix A- MAML Schema

```
<?xml version="1.0" encoding="utf-8"?>
<xsd:schema xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" attributeFormDefault="unqualified" elementFormDefault="qualified"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:vc="http://www.w3.org/2007/XMLSchema-versioning" vc:minVersion="1.1">

<!-- MAML root element -->
<xsd:element name="maml">
  <xsd:complexType>
    <xsd:sequence>

      <xsd:element name="stylename" type="xsd:string"/>
      <xsd:element name="profilename" type="xsd:string"/>

<!-- Lists of Core Elements -->
<xsd:element name="stances">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="stance" type="stance" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:element name="transitions">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="transition" type="transition" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

```

```
</xsd:sequence>  
</xsd:complexType>  
</xsd:element>
```

```
<xsd:element name="blocks">  
  <xsd:complexType>  
    <xsd:sequence>  
      <xsd:element name="block" type="block" minOccurs="0" maxOccurs="unbounded"/>  
    </xsd:sequence>  
  </xsd:complexType>  
</xsd:element>
```

```
<xsd:element name="punches">  
  <xsd:complexType>  
    <xsd:sequence>  
      <xsd:element name="punch" type="punch" minOccurs="0" maxOccurs="unbounded"/>  
    </xsd:sequence>  
  </xsd:complexType>  
</xsd:element>
```

```
<xsd:element name="techniques">  
  <xsd:complexType>  
    <xsd:sequence>  
      <xsd:element name="technique" type="technique" minOccurs="0" maxOccurs="unbounded"/>  
    </xsd:sequence>  
  </xsd:complexType>  
</xsd:element>
```

```
<xsd:element name="combinations">
```

```
<xsd:complexType>
  <xsd:sequence>
    <xsd:element name="combination" type="combination" minOccurs="0" maxOccurs="unbounded"/>
  </xsd:sequence>
</xsd:complexType>
</xsd:element>
```

```
<xsd:element name="patterns">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="pattern" type="pattern" minOccurs="0" maxOccurs="unbounded"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
```

```
</xsd:sequence>
</xsd:complexType>
<!-- end of List of Core Elements -->
```

```
<!-- Keys -->
```

```
<xsd:key name="stanceKey">
  <xsd:selector xpath="stances/stance"/>
  <xsd:field xpath="@name"/>
</xsd:key>
<xsd:key name="transitionKey">
  <xsd:selector xpath="transitions/transition"/>
  <xsd:field xpath="@name"/>
</xsd:key >
<xsd:key name="punchKey">
```

```
<xsd:selector xpath = "punches/punch"/>
<xsd:field xpath = "@name"/>
</xsd:key >
<xsd:key name="blockKey">
  <xsd:selector xpath = "blocks/block"/>
  <xsd:field xpath = "@name"/>
</xsd:key >
<xsd:key name="techniqueKey">
  <xsd:selector xpath = "techniques/technique"/>
  <xsd:field xpath = "@name"/>
</xsd:key >
<xsd:key name="combinationKey">
  <xsd:selector xpath = "combinations/combination"/>
  <xsd:field xpath = "@name"/>
</xsd:key >
<!-- end of Keys -->

<!-- Key References -->
<!-- Stances -->
<xsd:keyref name="fromStanceRef" refer="stanceKey">
  <xsd:selector xpath="./transitionList/fromStance"/>
  <xsd:field xpath = "fromStance"/>
</xsd:keyref>
<xsd:keyref name="toStanceRef" refer="stanceKey">
  <xsd:selector xpath="./transitionList/transition"/>
  <xsd:field xpath = "toStance"/>
</xsd:keyref>
<xsd:keyref name="patternStanceRef" refer="stanceKey">
  <xsd:selector xpath="./patterns/pattern/when/Practitioner"/>
```

```
<xsd:field xpath = "stance"/>
</xsd:keyref>
<xsd:keyref name="patternBlockStanceListRef" refer="stanceKey">
  <xsd:selector xpath = "./patterns/pattern/when/Practitioner/block"/>
  <xsd:field xpath = "stance"/>
</xsd:keyref>
<xsd:keyref name="patternPunchStanceListRef" refer="stanceKey">
  <xsd:selector xpath = "./patterns/pattern/when/Practitioner/punch"/>
  <xsd:field xpath = "stance"/>
</xsd:keyref>
<xsd:keyref name="punchesStanceListRef" refer="stanceKey">
  <xsd:selector xpath = "./punches/punch"/>
  <xsd:field xpath = "./stance"/>
</xsd:keyref>
<xsd:keyref name="blocksStanceListRef" refer="stanceKey">
  <xsd:selector xpath = "./blocks/block"/>
  <xsd:field xpath = "./stance"/>
</xsd:keyref>
<!-- end of Stances -->

<!-- Transitions -->
<xsd:keyref name="blocksTransitionListRef" refer="transitionKey">
  <xsd:selector xpath = "./blocks/block"/>
  <xsd:field xpath = "./transition"/>
</xsd:keyref>
<xsd:keyref name="punchesTransitionListRef" refer="transitionKey">
  <xsd:selector xpath = "./punches/punch"/>
  <xsd:field xpath = "./transition"/>
</xsd:keyref>
```

```
<xsd:keyref name="patternTransitionRef" refer="transitionKey">
  <xsd:selector xpath="/patterns/pattern/when/Practitioner"/>
  <xsd:field xpath="transition"/>
</xsd:keyref>
<xsd:keyref name="patternBlockTransitionListRef" refer="transitionKey">
  <xsd:selector xpath="/patterns/pattern/when/Practitioner/block"/>
  <xsd:field xpath="transition"/>
</xsd:keyref>
<xsd:keyref name="patternPunchTransitionListRef" refer="transitionKey">
  <xsd:selector xpath="/patterns/pattern/when/Practitioner/punch"/>
  <xsd:field xpath="transition"/>
</xsd:keyref>
<!-- Transitions referred to in Movements -->
<xsd:keyref name="techniquesMovementTransitionRef" refer="transitionKey">
  <xsd:selector xpath="/techniques/technique/movement"/>
  <xsd:field xpath="@transition"/>
</xsd:keyref>
<xsd:keyref name="combinationsMovementTransitionRef" refer="transitionKey">
  <xsd:selector xpath="/combinations/combo/movement"/>
  <xsd:field xpath="@transition"/>
</xsd:keyref>
<xsd:keyref name="reactionMovementTransitionRef" refer="transitionKey">
  <xsd:selector xpath="/patterns/pattern/do/reactions/reaction/movement"/>
  <xsd:field xpath="@transition"/>
</xsd:keyref>
<!-- end of Transitions referred to in Movements -->
<!-- end of Transitions -->

<!-- Blocks -->
```

```
<xsd:keyref name="techniquesBlockRef" refer="blockKey">
  <xsd:selector xpath="/techniques/technique"/>
  <xsd:field xpath="block"/>
</xsd:keyref>
<xsd:keyref name="combinationsBlockRef" refer="blockKey">
  <xsd:selector xpath="/combinations/combo"/>
  <xsd:field xpath="block"/>
</xsd:keyref>
<xsd:keyref name="reactionBlockRef" refer="blockKey">
  <xsd:selector xpath="/patterns/pattern/do/reactions/reaction"/>
  <xsd:field xpath="block"/>
</xsd:keyref>
<!-- end of Blocks -->
```

```
<!-- Punches -->
<xsd:keyref name="reactionPunchRef" refer="punchKey">
  <xsd:selector xpath="/patterns/pattern/do/reactions/reaction"/>
  <xsd:field xpath="punch"/>
</xsd:keyref>
<xsd:keyref name="techniquesPunchRef" refer="punchKey">
  <xsd:selector xpath="/techniques/technique"/>
  <xsd:field xpath="punch"/>
</xsd:keyref>
<xsd:keyref name="combinationsPunchRef" refer="punchKey">
  <xsd:selector xpath="/combinations/combo"/>
  <xsd:field xpath="punch"/>
</xsd:keyref>
<!-- end of Punches -->
```

```
<!-- Techniques -->
<xsd:keyref name="combinationsTechniqueRef" refer="techniqueKey">
  <xsd:selector xpath="/combinations/combination"/>
  <xsd:field xpath="technique"/>
</xsd:keyref>
<xsd:keyref name="reactionTechniqueRef" refer="techniqueKey">
  <xsd:selector xpath="/patterns/pattern/do/reactions/reaction"/>
  <xsd:field xpath="technique"/>
</xsd:keyref>
<!-- end of Techniques -->
```

```
<!-- Combinations -->
<xsd:keyref name="reactionCombinationRef" refer="combinationKey">
  <xsd:selector xpath="/patterns/pattern/do/reactions/reaction"/>
  <xsd:field xpath="combination"/>
</xsd:keyref>
<!-- end of Combinations -->
<!-- End of KeyRefs -->
</xsd:element>
```

```
<!-- Simple and Complex Types used to define MAML Elements -->
```

```
<!-- SimpleTypes representing Fundamental types used in definitions -->
<xsd:simpleType name="handAction">
  <xsd:restriction base="xsd:string">
    <xsd:pattern value="block|punch"/>
  </xsd:restriction>
</xsd:simpleType>
```



```
<xsd:simpleType name="side">  
  <xsd:restriction base="xsd:string">  
    <xsd:pattern value="left|right"/>  
  </xsd:restriction>  
</xsd:simpleType>
```

```
<xsd:simpleType name="oldposition">  
  <xsd:restriction base="xsd:string">  
    <xsd:pattern value="front|behind"/>  
  </xsd:restriction>  
</xsd:simpleType>
```

```
<xsd:simpleType name="movementType">  
  <xsd:restriction base="xsd:string">  
    <xsd:pattern value="swing|stationary"/>  
  </xsd:restriction>  
</xsd:simpleType>
```

```
<xsd:simpleType name="blockDirection">  
  <xsd:restriction base="xsd:string">  
    <xsd:pattern value="outward|across"/>  
  </xsd:restriction>  
</xsd:simpleType>
```

```
<xsd:simpleType name="moveDirection">  
  <xsd:restriction base="xsd:string">  
    <xsd:pattern value="toward|away|front|behind"/>  
  </xsd:restriction>  
</xsd:simpleType>
```

```
<xsd:simpleType name="direction">
  <xsd:restriction base="xsd:integer">
    <xsd:maxInclusive value="12"/>
    <xsd:minInclusive value="1"/>
  </xsd:restriction>
</xsd:simpleType>
```

```
<xsd:simpleType name="position">
  <xsd:restriction base="xsd:integer">
    <xsd:maxInclusive value="12"/>
    <xsd:minInclusive value="1"/>
  </xsd:restriction>
</xsd:simpleType>
```

```
<!-- end of Fundamental types -->
```

```
<!-- ComplexTypes representing the Core MAML Elements -->
```

```
<xsd:complexType name="stance">
  <xsd:sequence>
    <xsd:element name="leading" type="side" minOccurs="0"/>
    <xsd:element name="spread" type="xsd:decimal"/>
    <xsd:element name="cog" type="xsd:decimal"/>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="required"/>
  <xsd:attribute name="id" type="xsd:string" use="required"/>
  <xsd:attribute name="crossed" type="xsd:boolean" default="false" use="optional"/>
</xsd:complexType>
```

```
<xsd:complexType name="transition">
```

```
<xsd:sequence>
  <xsd:element name="fromStance" type="xsd:string"/>
  <xsd:element name="step" type="step" minOccurs="0" maxOccurs="unbounded"/>
  <xsd:element name="toStance" type="xsd:string"/>
</xsd:sequence>
<xsd:attribute name="name" type="xsd:string" use="required"/>
<xsd:attribute name="id" type="xsd:string" use="required"/>
<xsd:attribute name="type" type="movementType"/>
<xsd:attribute name="toDirection" type="direction" use="required"/>
</xsd:complexType>

<xsd:complexType name="block">
  <xsd:sequence>
    <xsd:element name="stanceList">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element name="stance" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
    <xsd:element name="transitionList">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element name="transition" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="required"/>

```

```
<xsd:attribute name="id" type="xsd:string" use="required"/>
<xsd:attribute name="hand" type="side"/>
<xsd:attribute name="blockDirection" type="blockDirection"/>
</xsd:complexType>
```

```
<xsd:complexType name="punch">
  <xsd:sequence>
    <xsd:element name="stanceList">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element name="stance" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
    <xsd:element name="transitionList">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element name="transition" type="xsd:string" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="required"/>
  <xsd:attribute name="id" type="xsd:string" use="required"/>
  <xsd:attribute name="hand" type="side" use="required"/>
  <xsd:attribute name="range" type="xsd:integer" use="required"/>
</xsd:complexType>
```

```
<xsd:complexType name="technique">
```

```
<xsd:sequence>
  <xsd:choice maxOccurs="unbounded">
    <xsd:element name="block" type="xsd:string"/>
    <xsd:element name="punch" type="xsd:string"/>
    <xsd:element name="movement" type="movement"/>
  </xsd:choice>
</xsd:sequence>
<xsd:attribute name="name" type="xsd:string" use="required"/>
<xsd:attribute name="id" type="xsd:string" use="required"/>
</xsd:complexType>
```

```
<xsd:complexType name="combination">
  <xsd:sequence>
    <xsd:choice maxOccurs="unbounded">
      <xsd:element name="block" type="xsd:string"/>
      <xsd:element name="punch" type="xsd:string"/>
      <xsd:element name="movement" type="movement"/>
    </xsd:choice>
  </xsd:sequence>
  <xsd:attribute name="name" type="xsd:string" use="required"/>
  <xsd:attribute name="id" type="xsd:string" use="required"/>
</xsd:complexType>
```

```
<xsd:complexType name="pattern">
  <xsd:sequence>
    <xsd:element name="when">
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element name="Opponent">
```

```
<xsd:complexType>
  <xsd:sequence>
    <xsd:element name="state" maxOccurs="unbounded">
      <xsd:complexType>
        <xsd:attribute name="position" type="position" use="required"/>
        <xsd:attribute name="handAction" type="handAction" use="required"/>
        <xsd:attribute name="hand" type="side"/>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:element name="Practitioner">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:choice maxOccurs="unbounded">
        <xsd:element name="stance" type="xsd:string"/>
        <xsd:element name="transition" type="xsd:string"/>
        <xsd:element name="punch" type="xsd:string"/>
        <xsd:element name="block" type="xsd:string"/>
      </xsd:choice>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:element name="do">
  <xsd:complexType>
```

```
<xsd:sequence>
  <xsd:element name="reaction" type="reaction" maxOccurs="unbounded"/>
</xsd:sequence>
<xsd:assert test="sum(reaction/@probability) eq 1.0">
</xsd:assert>
</xsd:complexType>
</xsd:element>
</xsd:sequence>
</xsd:complexType>
<!-- end of Core MAML Elements -->
```

```
<!-- ComplexTypes used only within existing Core Elements -->
```

```
<xsd:complexType name="step">
  <xsd:attribute name="id" type="xsd:string" use="optional"/>
  <xsd:attribute name="name" type="xsd:string" use="optional"/>
  <xsd:attribute name="foot" type="side" use="required"/>
  <xsd:attribute name="stepOver" type="xsd:boolean" use="optional"/>
</xsd:complexType>
```

```
<xsd:complexType name="movement">
  <xsd:attribute name="transition" type="xsd:string"/>
  <xsd:attribute name="id" type="xsd:string" use="optional"/>
  <xsd:attribute name="name" type="xsd:string" use="optional"/>
  <xsd:attribute name="direction" type="direction" use="optional"/>
</xsd:complexType>
```

```
<xsd:complexType name="reaction">
  <xsd:sequence>
    <xsd:choice maxOccurs="unbounded">
```

```
<xsd:element name="block" type="xsd:string"/>
<xsd:element name="punch" type="xsd:string"/>
<xsd:element name="movement" type="movement"/>
<xsd:element name="technique" type="xsd:string"/>
<xsd:element name="combination" type="xsd:string"/>
<xsd:element name="step" type="step"/>
</xsd:choice>
</xsd:sequence>
<xsd:attribute name="id" type="xsd:string" use="required"/>
<xsd:attribute name="probability" type="xsd:decimal" use="required"/>
</xsd:complexType>
<!-- end of complexTypes used within Core Elements -->

</xsd:schema>
```