

پیوست (آموزش و مثال های نشانه گذاری)

نحوه تعامل با نرم افزار

تعریف موجودیت

کافی است از نوار بالا نوع موجودیت را انتخاب کنید و با گرفتن کلیک سمت چپ موس کلمه و یا عبارت مورد نظر را انتخاب کنید. نرم افزار فضاهای خالی (اسپیس) را در نظر نمیگیرد پس نگران فضاهای خالی نباشید.

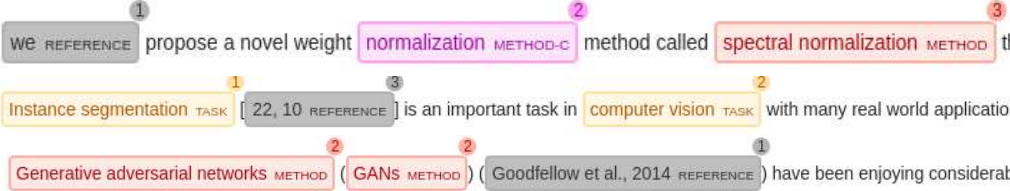

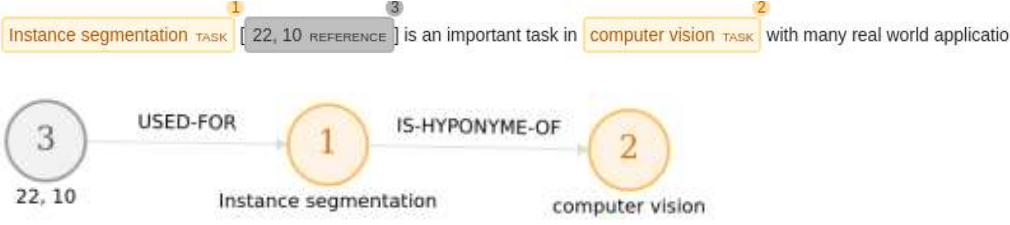
تعریف گروه برای موجودیت ها

اگر نام موجودیت های انتخاب شده کاملاً یکسان باشند نرم افزار به صورت اتوماتیک آن ها در یک گروه قرار می دهد. شماره ای که در بالای هر موجودیت نوشته شده است نشان دهنده ایندکس گروه آن موجودیت می باشد و موجودیت هایی که در یک گروه قرار دارند دارای شماره یکسانی خواهند بود. برای قرار دادن یک موجودیت در یک گروه کافی است دکمه شیفت را نگه دارید و آن موجودیت را روی موجودیت یا گروه مورد نظر با موس بکشانید و رها کنید. با این کار در یک گروه قرار خواهند گرفت. اما برای خارج کردن یک موجودیت از گروه شما نیاز دارید به بخش گروه ها رفته و با آیکن جدا کننده که در هر گروه مشاهده می کنید موجودیت های از یکدیگر جدا نمایید.

تعریف ارتباط بین گروه ها

برای ایجاد یک ارتباط تنها کافی است یک موجودیت (در واقع یک گروه) را با موس بکشانید و روی یک موجودیت دیگر (در واقع یک گروه دیگر) رها کنید. با این کار یک پنجره جدید برای شما ظاهر خواهد شد که ارتباطاتی که برای این دو گروه قابل تعریف هستند نشان داده می شود و شما یک ارتباط را انتخاب می کنید. برای تغییر ارتباطات تعریف شده دو راه وجود دارد. یا می توانید به بخش ارتباطات رفته و ارتباط مورد نظر را بیابید و ویرایش نمایید و یا اینکه روی موجودیت مورد کلیک نمایید و پنجره باز شده به شما ارتباطات تعریف شده برای آن موجودیت را به شما نمایش می دهد.

Entities:

	Rule & Example
۱	<p>Reference</p> <ul style="list-style-type: none"> We, this paper, this work , ... are annotated as Reference The multiple numbers or references must be annotated as one reference. The reference could be mentioned by name of author of paper
	
۲	<p>Method-Class</p> <ul style="list-style-type: none"> The general methods that refer to a class of methods should be annotated as Method_Class (METHOD_C). These methods usually have plural “s” or indefinite article “a or an”.
	
۳	<p>Task, sub-tasks, fields are annotated as Task. Usually relation of tasks and fields are defined by HYPONYM</p>
	
۴	<p>The specific method names should be annotated as Method. The methods usually have some reference papers</p>

AutoML¹ approaches, and Neural Architecture Search² (NAS²) methods in particular, present a D. Stamouliis [11] 72.0 - MobileNetV3³ [12 REFERENCE] 75.2 - NASNet-A⁴ [2 REFERENCE] 74.0 800k Amoebanet-A⁵ [3 REFERENCE] 74.5 500k PNASNet⁶ [13 REFERENCE] 74.2 120k DARTS⁷ [14 REFERENCE] 74.1 100 GDAS-A1⁸ [1 REFERENCE] 74.0 240 MnasNet-A1⁹ [1 REFERENCE] 75.2 40k ChamNet-B¹⁰ [15 REFERENCE] 73.80 240 FBNet-B¹¹ [16 REFERENCE] 74.9 90 ProxylessNAS-R¹² [17 REFERENCE] accuracy, while also improving upon manually-designed MobileNets¹³ [12 REFERENCE].

Δ **Metrics** are the evaluation criteria that are used for evaluation purposes. Usually methods are EVALUATED ON a specific metric.

In particular, Single-Path NAS²³ achieves new state-of-the-art 75.62%²⁴ top-1 accuracy²⁵ compared to methods designing for similar latency²⁶ setting (~80ms²⁷).

```

graph TD
    23((23)) -- IS-EVALUATED-ON --> 25((25))
    25 --- 25_text[top-1 accuracy]
    25 -- IS-EQUAL-TO --> 24((24))
    24 --- 24_text[75.62%]
    26((26)) -- IS-EQUAL-TO --> 27((27))
    26 --- 26_text[latency]
    27 --- 27_text[80ms]
  
```

♀ **Dataset:** Each dataset name should be annotated as a dataset. The general terms like “image datasets” must not be annotated. Usually a method IS_EVALUATED_ON a dataset.

hours were spent per 1000⁶ instance masks for COCO⁴ 40⁵.

∇ **Code:** The code URLs should be annotated as Code. The code usually has a “HAS” relation with method or reference.

training for downstream detection problems. Results show our DADA¹ is at least one order of magnitude faster than the state-of-the-art while achieving very comparable accuracy. The code is available at <https://github.com/VDIGPKU/DADA>².



^ **HYPER_PARAMETER:** all parameters and hyper parameters of a method should be annotated as this type. Usually hyperparameters should be connected to a method with a “HAS” relationship.

trained with stochastic gradient descent (SGD) for 250K iterations with the initial learning rate METHOD being 0.01 NUMBER and a minibatch of 192 images distributed on 8 GPUs. The learning rate HYPERPARAMETER is divided by 10 NUMBER at iteration 150K NUMBER and 200K NUMBER, respectively. Weight decay HYPERPARAMETER is set as 0.0005 NUMBER, and momentum HYPERPARAMETER is set as 0.9 NUMBER. Multi-scale training from 320 NUMBER to 608 NUMBER pixels is applied. MixUp

```

graph TD
    12((12)) --- HAS --- 1((1))
    1 --- IS-EQUAL-TO --- 2((2))
    12 --- HAS --- 8((8))
    8 --- IS-EQUAL-TO --- 3((3))
    12 --- HAS --- 7((7))
    7 --- IS-EQUAL-TO --- 4((4))
    
```

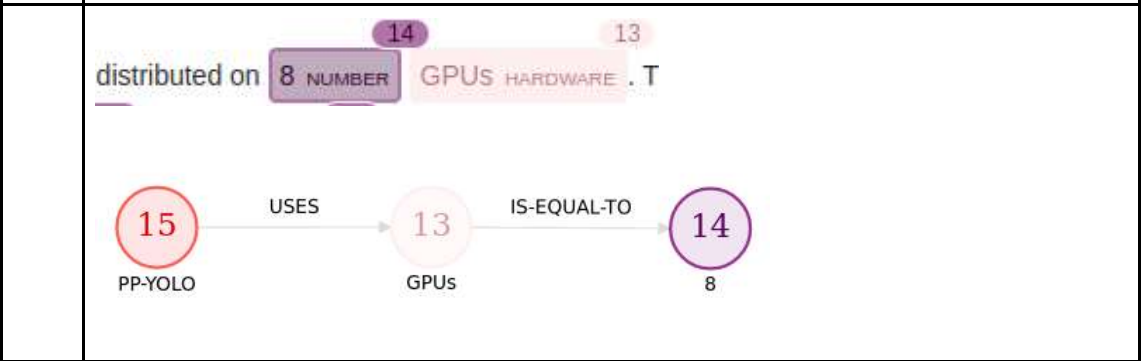
Diagram illustrating relationships between parameters and methods:

- PP-YOLO (12) HAS learning rate (1)
- learning rate (1) IS-EQUAL-TO 0.01 (2)
- PP-YOLO (12) HAS Weight decay (8)
- Weight decay (8) IS-EQUAL-TO 0.0005 (3)
- PP-YOLO (12) HAS momentum (7)
- momentum (7) IS-EQUAL-TO 0.9 (4)

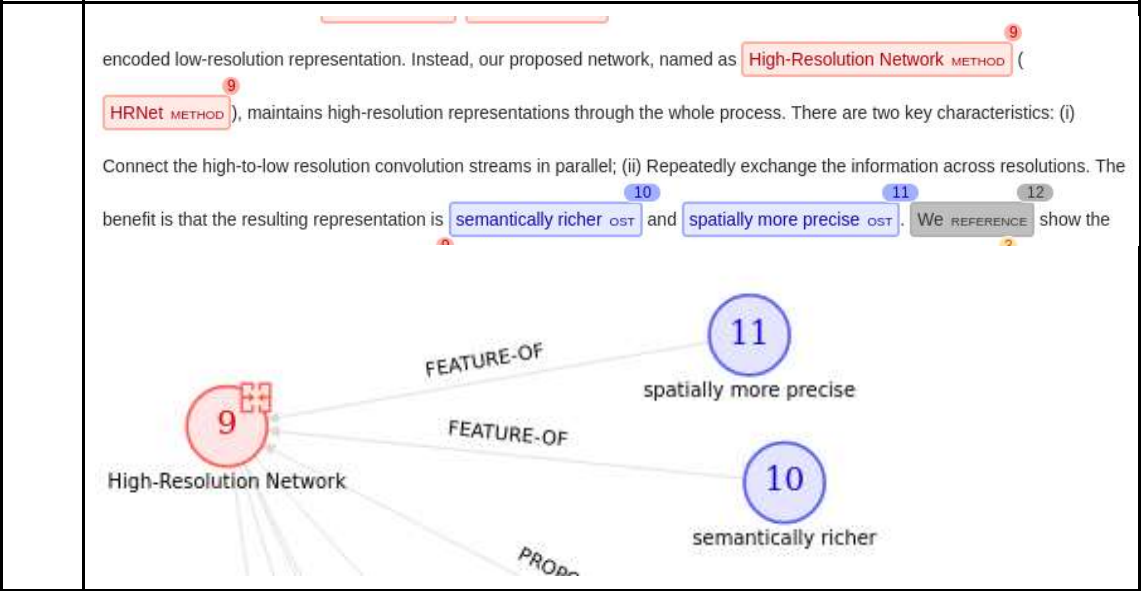
^ **NUMBER:** any number must be annotated as a NUMBER. The unit of each number should be annotated alongside the number.

trained with stochastic gradient descent (SGD) for 250K iterations with the initial learning rate being 0.01 and a minibatch of 192 images distributed on 8 GPUs. The learning rate is divided by 10 at iteration 150K and 200K, respectively. Weight decay is set as 0.0005, and momentum is set as 0.9. Multi-scale training from 320 to 608 pixels is applied. MixUp

10. **HARDWARE:** The hardware presented in papers. Hardware is usually USED_FOR a specific method and IS_EQUAL_TO some numbers.



11. **FEATURE:** Any features, pros, cons and important aspects of a method or task or reference should be annotated as **FEATURE**



12. **OTHER-SCIENTIFIC-TERM (OST):** any other entity that does not fall in any of the above entity groups and it conveys important information should be annotated as OST. These entities could be annotated by all

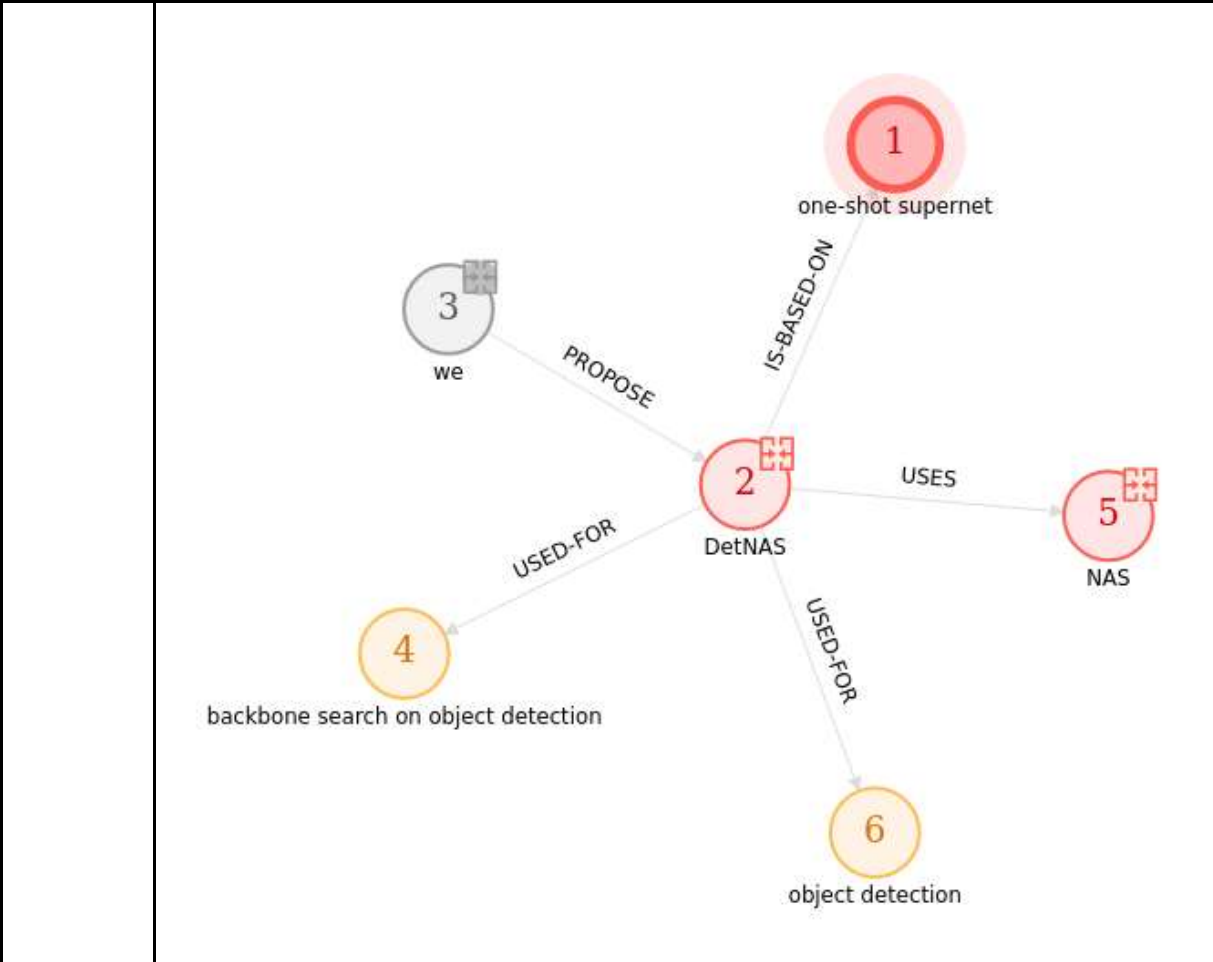
	possible relationships.
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Relations:

For the relations please see the schema of data in the application. The schema shows you all possible relations that could be defined between each two entities. In the following table all relations of OST entities are removed from schema to simplify the schema. The OST terms could be annotated by all possible relations.

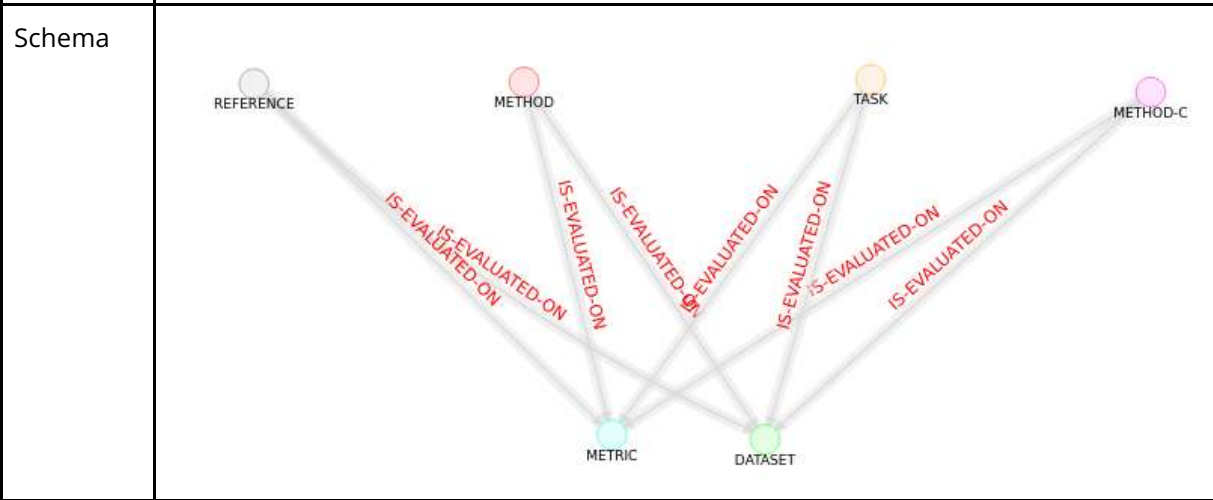
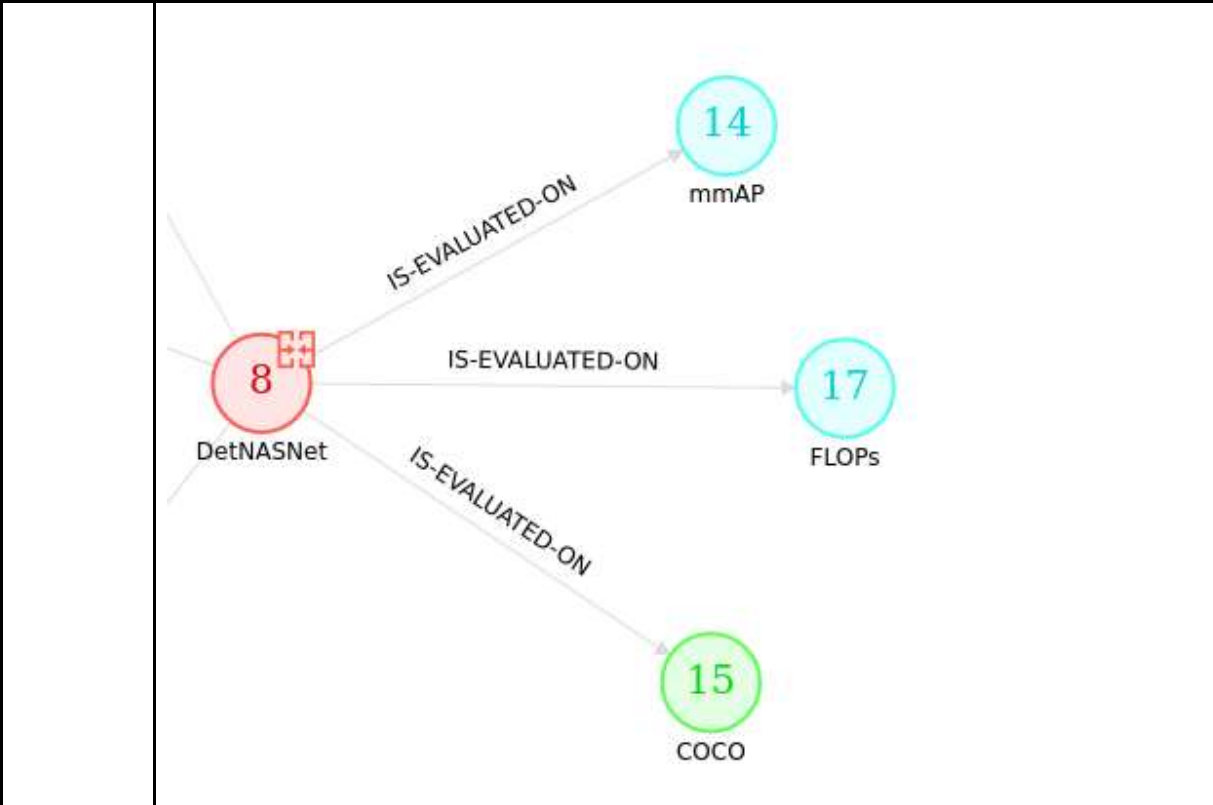
	Relation & Schema & Examples
1	<p>HYPONYM (Kind of): Hyponymy shows the relationship between a generic term (hypernym) and a specific instance of it (hyponym). A hyponym is a word or phrase whose semantic field is more specific than its hypernym.</p>
Example	<p>High-resolution representations ² <small>METHOD-C</small> are essential for ⁶ <small>TASK</small> position-sensitive vision problems ⁶ such as ³ <small>TASK</small> human pose estimation ⁴ <small>TASK</small>, ⁵ <small>TASK</small> semantic segmentation ⁵ <small>TASK</small>, and ⁵ <small>TASK</small> object detection ⁵ <small>TASK</small>. Existing state-of-the-art frameworks first</p> <pre> graph TD 6((6)) -- IS-HYPONYM-OF --> 5((5)) 6 -- IS-HYPONYM-OF --> 4((4)) 6 -- IS-HYPONYM-OF --> 3((3)) 3 -- USED-F --> 5 3 -- PART-OF --> 4 </pre>

<p>Schema</p>	
<p>γ</p>	<p>Based-On: When a (METHOD or METHOD-CLASS or ReFERENCE) is based on another one we annotated this relationship as BASED-ON</p>
<p>Example</p>	<p>Object detectors are usually equipped with backbone networks designed for image classification. It might be sub-optimal because of the gap between the tasks of image classification and object detection. In this work, we ³REFERENCE present ²DetNAS ²METHOD to use ⁵Neural Architecture Search ⁵METHOD (⁵NAS ⁵METHOD) for the design of better backbones for ⁶object detection ⁶TASK . It is non-trivial because detection training typically needs ⁷ImageNet ⁷DATASET pre-training while ⁵NAS ⁵METHOD systems require accuracies on the target detection task as supervisory signals. Based on the technique of ¹one-shot supernet ¹METHOD , which contains all possible networks in the search space, we ³REFERENCE propose a framework for ⁴backbone search on object detection ⁴TASK . We</p>



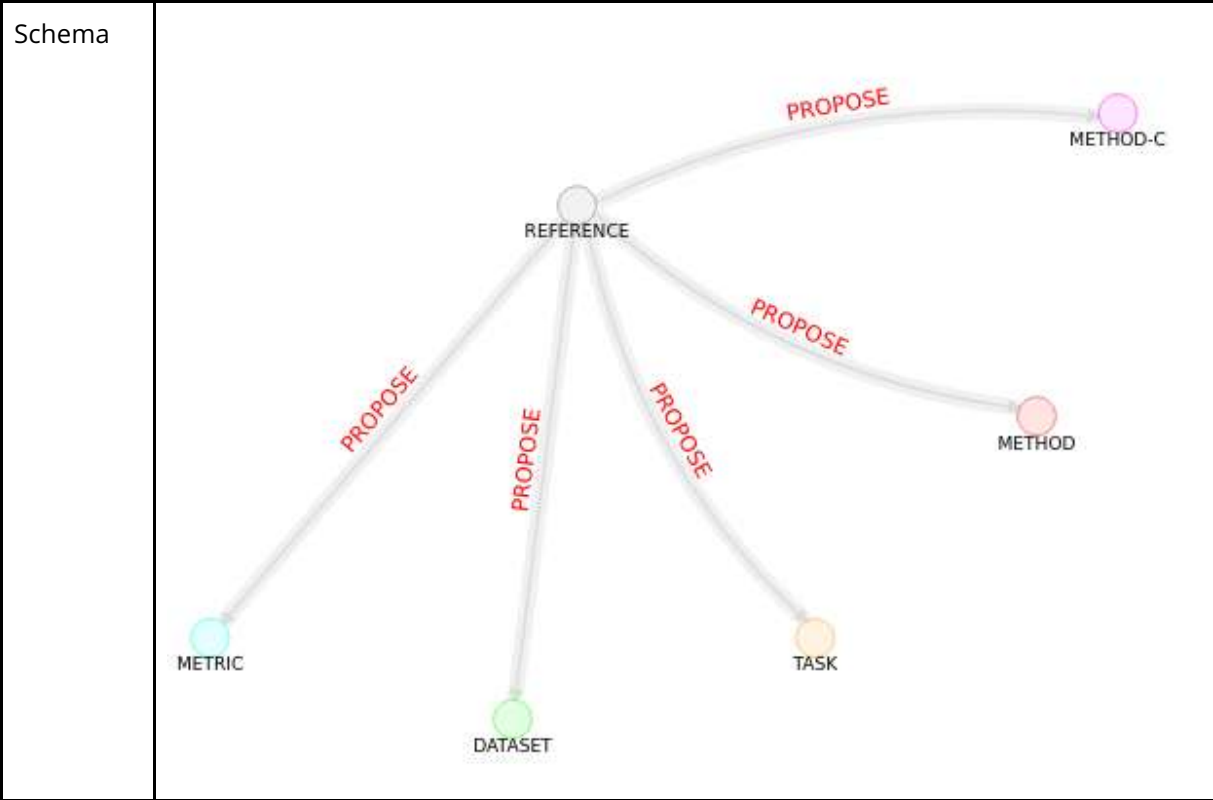
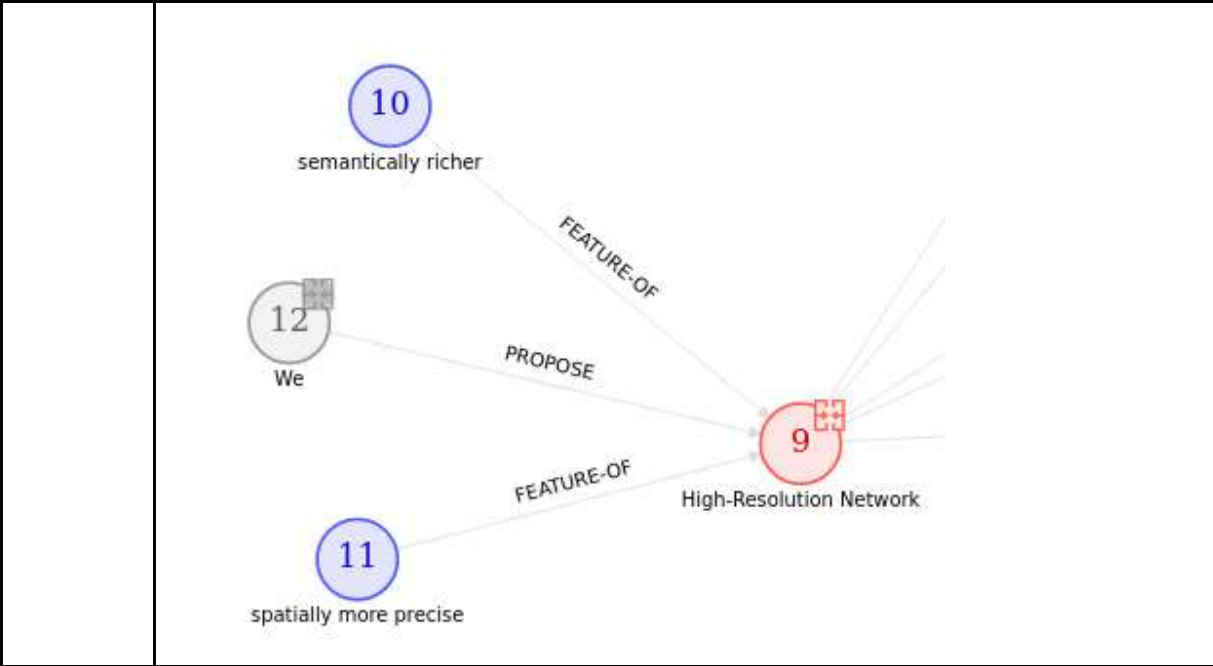
<p>Schema</p>	<pre> graph TD REFERENCE((REFERENCE)) -- IS-BASED-ON --> REFERENCE METHOD((METHOD)) -- IS-BASED-ON --> METHOD METHOD_C((METHOD-C)) -- IS-BASED-ON --> METHOD_C REFERENCE -- IS-BASED-ON --> METHOD REFERENCE -- IS-BASED-ON --> METHOD_C METHOD -- IS-BASED-ON --> METHOD_C </pre>
<p>۳</p>	<p>Compare-Of: When two METHOD or METHOD-C are comparing with each other then we annotate relation of COMPARE-OF for that two entities.</p>
<p>Example</p>	<p>Our main result architecture, DetNASNet_{METHOD}⁸, is searched on FPN in the large search space. The architecture of DetNASNet_{METHOD}⁸ is depicted in the supplementary material. We search on FPN because it is a mainstream two-stage detector that has been used in other vision tasks, e.g., instance segmentation_{TASK}⁹ and skeleton detection_{TASK}¹⁰ [9]. Table We list three hand-crafted networks for comparisons, including ResNet-50_{METHOD}¹¹, ResNet-101_{METHOD}¹² and ShuffleNetv2-40_{METHOD}¹³.</p>

Schema	
ƴ	<p>Evaluated-ON: Every METHOD, METHOD-C, TASK or REFERENCE could be evaluated on a METRIC or DATASET</p>
Example	<p>The framework of DetNAS ² METHOD consists of three steps: (1) pre-training the one-shot supernet on ImageNet ⁷ DATASET, (2) fine-tuning the one-shot supernet on detection datasets, (3) architecture search on the trained supernet with an evolutionary algorithm (EA). In experiments, the main result backbone network, DetNASNet ⁸ METHOD, with much fewer FLOPS ¹⁷ METRIC, achieves 2.9% ¹⁸ NUMBER better mAP ¹⁴ METRIC than ResNet-50 on COCO ¹⁵ DATASET with the FPN detector ¹⁶ METHOD. Its enlarged version,</p>



Δ **PROPOSE:** If a REFERENCE propose a METHOD, DATASET, METRIC or TASK we have to annotate it as **PROPOSE** relationship

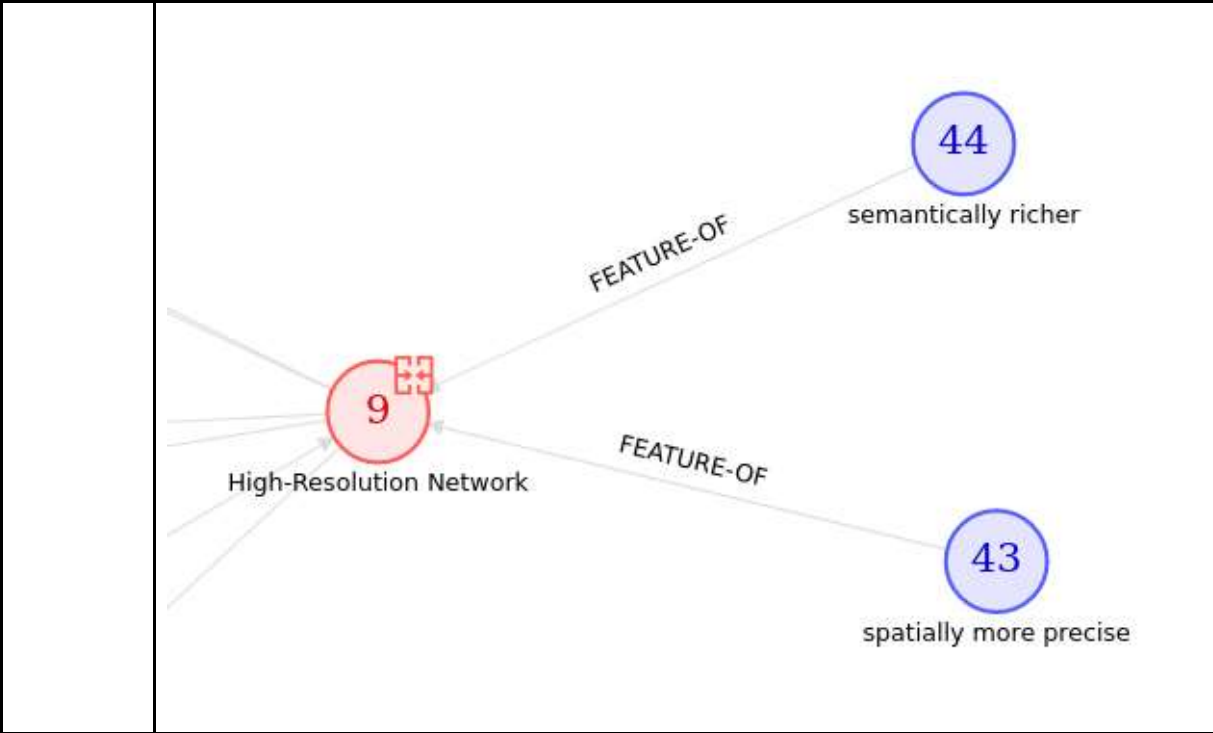
Example
 benefit is that the resulting representation is semantically richer¹⁰ OST and spatially more precise¹¹ OST. We REFERENCE¹² show the superiority of the proposed HRNet⁹ METHOD in a wide range of applications, including human pose estimation³ TASK.

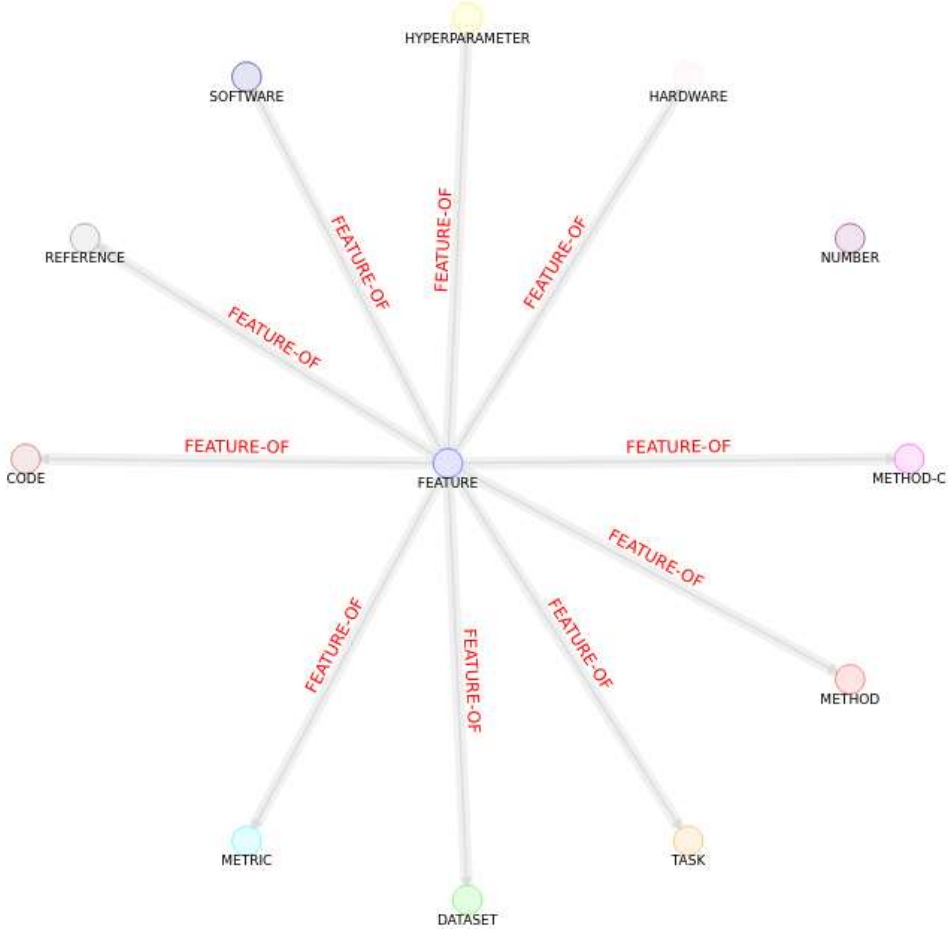


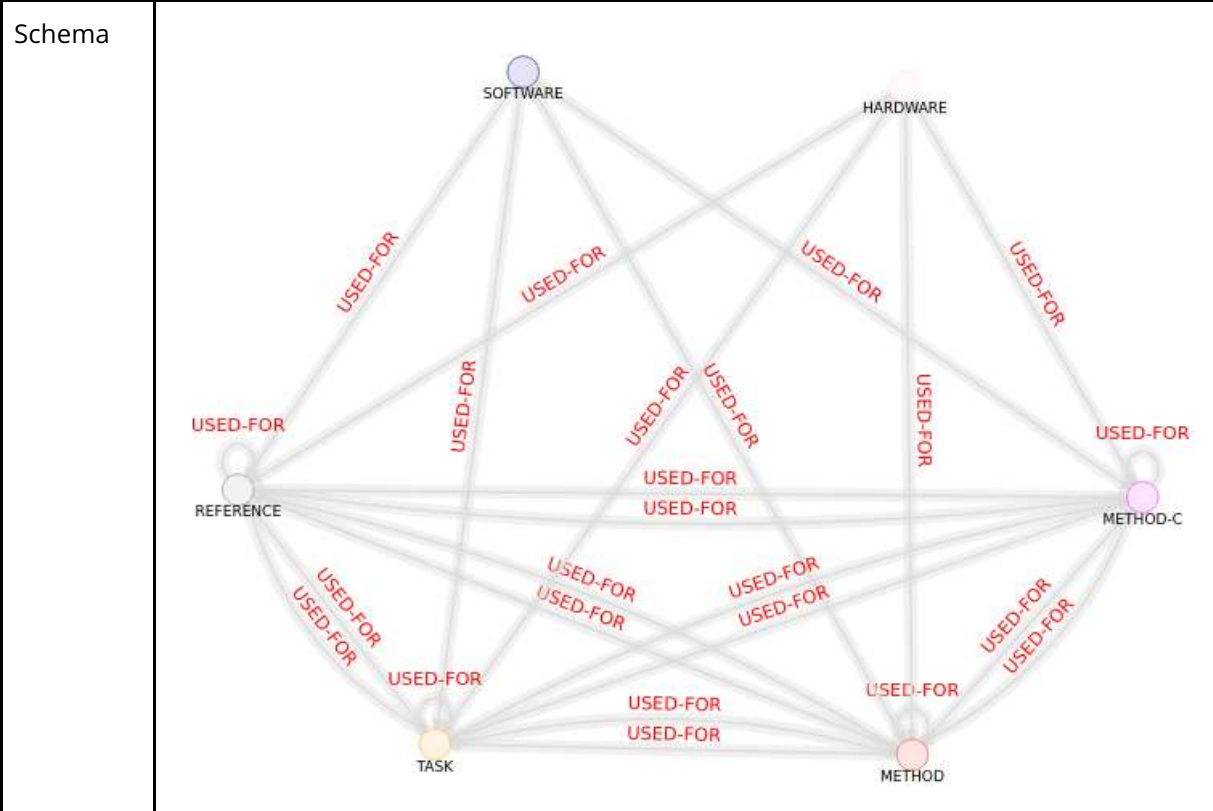
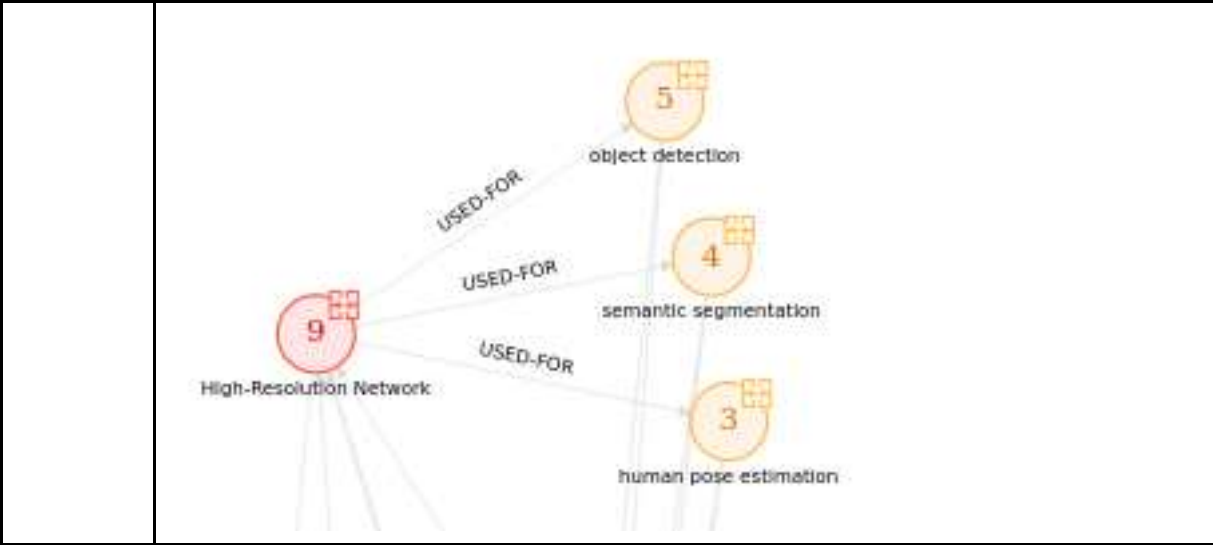
⤵ **PART-OF:** every METHOD, METHOD-C, REFERENCE, TASK and OST could be part of each other. For example when a method consists of several other methods then those methods are part of the main

	method.
Example	<p>The framework of DetNAS METHOD consists of three steps: (1) pre-training the one-shot supernet on ImageNet, (2) fine-tuning the one-shot supernet on detection datasets, (3) architecture search on the trained supernet with an</p> <pre> graph LR 2((2)) --- PART-OF 19((19)) 2 --- PART-OF 20((20)) 2 --- PART-OF 21((21)) subgraph Labels 19 --- p[pre-training] 20 --- f[fine-tuning] 21 --- a[architecture search] end </pre>

<p>Schema</p>	<pre> graph TD REFERENCE((REFERENCE)) METHOD_C((METHOD-C)) TASK((TASK)) METHOD((METHOD)) REFERENCE -- PART-OF --> REFERENCE METHOD_C -- PART-OF --> METHOD_C TASK -- PART-OF --> TASK METHOD -- PART-OF --> METHOD REFERENCE -- PART-OF --> METHOD_C REFERENCE -- PART-OF --> TASK REFERENCE -- PART-OF --> METHOD METHOD_C -- PART-OF --> TASK METHOD_C -- PART-OF --> METHOD TASK -- PART-OF --> METHOD </pre>
<p>v</p>	<p>FEATURE-OF The FEATURE entities are connected to all entities by relation of FEATURE-OF.</p>
<p>Example</p>	<p>encoded low-resolution representation. Instead, our proposed network, named as High-Resolution Network (METHOD) (HRNet METHOD), maintains high-resolution representations through the whole process. There are two key characteristics: (i) Connect the high-to-low resolution convolution streams in parallel; (ii) Repeatedly exchange the information across resolutions. The benefit is that the resulting representation is semantically richer (FEATURE) and spatially more precise (FEATURE). We REFERENCE</p>



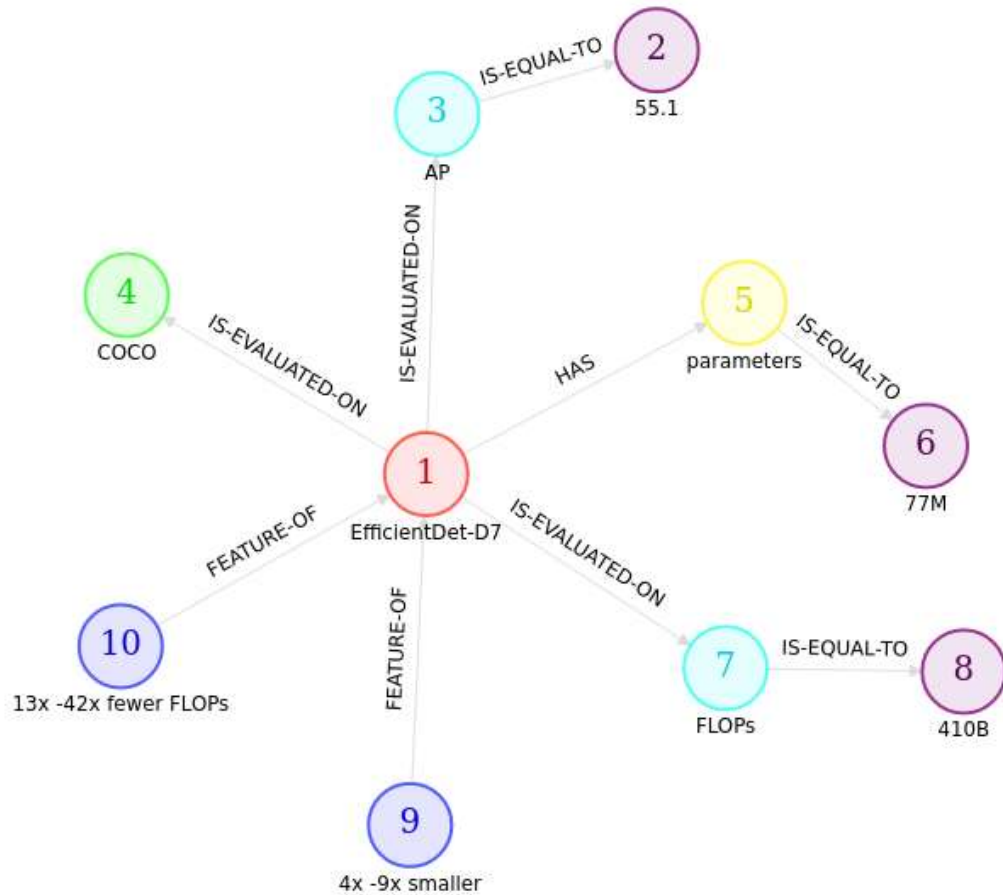
<p>Schema</p>	
<p>^</p>	<p>USED_FOR (Invert of USES) When an entity uses another one we use this relationship. For entity types please see the schema of this relation.</p>
<p>Example</p>	<p>benefit is that the resulting representation is ¹⁰semantically richer ^{OST} and ¹¹spatially more precise ^{OST}. We ¹²REFERENCE show the superiority of the proposed ⁹HRNet ^{METHOD} in a wide range of applications, including ³human pose estimation ^{TASK}, ⁴semantic segmentation ^{TASK}, and ⁵object detection ^{TASK}, suggesting that the ⁹HRNet ^{METHOD} is a stronger backbone for ¹³computer vision ^{TASK} problems. All the codes are available at ¹⁴https://github.com/HRNet ^{CODE}.</p>



9 **IS-EQUAL-TO**
 This relation is used for numbers to assign to a HYPERPARAMETER, METRIC or HARDWARE

Example

resource constraints. In particular, with singlemodel and single-scale, our **EfficientDet-D7** ¹ achieves state-of-the-art **55.1** ² **AP** ³ **METRIC** on **COCO** ⁴ **DATASET** test-dev with **77M** ⁶ **NUMBER** **parameters** ⁵ **HYPERPARAMETER** and **410B** ⁸ **NUMBER** **FLOPs** ⁷ **METRIC** 1, being **4x -9x** ⁹ **smaller** **FEATURE** and using **13x -42x** ¹⁰ **fewer FLOPs** **FEATURE** than previous detectors. Code is



<p>Schema</p>	
<p>1.</p>	<p>HAS This relation is used to connect METHOD, METHOD-C, REFERENCE or SOFTWARE to CODE and HYPERPARAMETERS. (please see the schema)</p>
<p>Example</p>	<p>resource constraints. In particular, with singlemodel and single-scale, our EfficientDet-D7¹ <small>METHOD</small> achieves stateof-the-art</p> <p>55.1² <small>NUMBER</small> AP³ <small>METRIC</small> on COCO⁴ <small>DATASET</small> test-dev with 77M⁶ <small>NUMBER</small> parameters⁵ <small>HYPERPARAMETER</small> and 410B⁸ <small>NUMBER</small></p> <p>FLOPs⁷ <small>METRIC</small> 1, being 4x -9x smaller⁹ <small>FEATURE</small> and using 13x -42x fewer FLOPs¹⁰ <small>FEATURE</small> than previous detectors. Code is</p>

